

skin diver

FOREMOST AUTHORITY IN ITS FIELD MARCH 1980

\$1.50
IN CANADA
\$1.75



The **JIM SUIT** Commercial Diving's Super Weapon

CALIFORNIA'S BEGG ROCK
PIKES PEAK OF THE PACIFIC

CONCH REEF-A DIFFERENT KIND
OF DIVE IN THE FLORIDA KEYS

DIVE A NEW WRECK
IN BARBADOS

EXCLUSIVE!
UNABRIDGED
INTERVIEW WITH
JERRY GREENBERG



RETAILERS: SEE PAGE 28
FOR SPECIAL RDA ANNOUNCEMENT



ALL INCLUSIVE ROUNDUP ON DIVE FINS SPECIAL 12 PAGE SECTION

THERE'S A NEW GUN IN TOWN

ORIGINAL "SHOTGUN"

**Split barrel
action reduces
exhalation effort**

**Contoured
mouthpiece
is fitted to
teeth contours**

**Self-Draining
Second Barrel**

There's a new gun in town. Scubapro's "Son of the Gun" Shotgun Snorkel. Same easy-to-clear, Shotgun, 2-barrel design, but scaled down to an $1\frac{1}{16}$ " bore diameter and contour mouthpiece for divers with a smaller bite.

Gravity does the work instead of you. Designed with a self-drain second barrel, the Shotgun reduces the water column in half, thus minimizing your exhalation effort. As your head breaks the surface, water is draining out the second barrel, reducing the water volume in the main barrel. Then only a soft puff is required to clear your snorkel. It's the easiest clearing, driest snorkel around. And there's more too! Scubapro's contour mouthpiece fits to your teeth's bite as well as your mouth. So even holding onto your Shotgun is easier. Put gravity to work for you on your next dive with the "Shotgun" or "Son of the Gun" Snorkel. Patent pending. Only from Scubapro, sold in selected dive stores.

**"SON OF
THE GUN"**

SCUBAPRO®

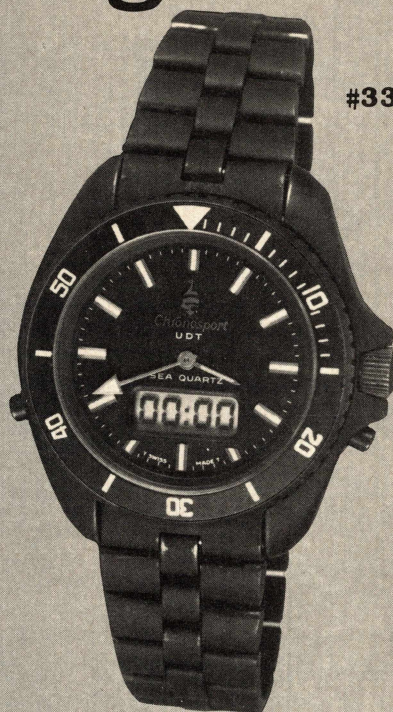
Send \$2.00 for the new Full-Color Catalog
and Free Wetsuit Decal and Car Decal.
Scubapro, Dept. SD,
3105 E. Harcourt, Compton, CA 90221

We've gone to great lengths so you can go to great depths.

Chronosport has become the leading brand of divers' watches in the U.S.A. because of innovation, quality, design, value and service.



#3907



#3306



#3207

#3306

UNIVERSAL DIVING TIMER \$320.00

The most advanced divers' watch on the market today, combining all of the advantages of a conventional dial and hands, with the split second accuracy and versatility of an integrated, digital multifunction display, (LCD) providing:

1. CHRONOGRAPH (Stopwatch)
2. SECOND TIME ZONE
3. SECONDS AND DATE

The U.D.T. is easy to operate, beautifully designed, rugged and superbly accurate. Black case, pressure tested 330 ft., mineral crystal, one way ratcheted bezel and screw down crown.

5 YEAR LIMITED GUARANTEE

#3307 WITH MATCHING METAL BRACELET \$395.00

SEA QUARTZ 30 and MINI QUARTZ 30

The most popular Chronosport watches for women and men available in solid stainless steel and 20 micron goldplated Champagne editions. Mineral crystals, one way ratcheted bezels, screw down crowns and quartz movements guaranteed accurate to within one minute a year are all standard as well as pressure tested cases to 990 ft.

5 YEAR LIMITED GUARANTEE

SEA QUARTZ 30 FOR MEN

#3206 Steel on strap	\$195.00
#3207 Steel on steel bracelet	\$220.00
#3406 Champagne on strap	\$280.00
#3407 Champagne on matching bracelet	\$355.00

MINI QUARTZ 30 FOR WOMEN

#3806 Steel on strap	\$195.00
#3807 Steel on steel bracelet	\$220.00
#3906 Champagne on strap	\$280.00
#3907 Champagne on matching bracelet	\$355.00

Available from all leading dive shops or direct from Chronosport.

Visa and Mastercharge orders welcomed.

Telephone (203) 853-9593

Chronosport, Inc. 119 Rowayton Avenue Rowayton, CT 06853 SD80/3

Please send me:
CHRONOSPORT REF. NO.: _____
CHRONOSPORT REF. NO.: _____

Please charge my ☐ Visa ☐ Mastercharge

Exp. date _____

Name _____ Address _____ City _____ State _____ Zip _____

skindiver

Volume Twenty-Nine Number Three

COMMERCIAL DIVING

- 8 **THE JIM—MAN'S DEEP SEA SPACE CAPSULE** MAVIS HILL
The suit that allows humans to work 2000 feet underwater

MARINE LIFE

- 16 **THE GLORIOUS BRISTLE WORM** GERI MURPHY
A beautiful underwater worm with a dangerous surprise

PHOTOGRAPHY

- 30 **FLASH TECHNIQUES** JIM AND CATHY CHURCH
Back to the basics

LOCAL DIVING

- 38 **BEGG ROCK** ERIC HANAUER
A Southern California sentinel in the sea

- 40 **DIVING THE MONTANA TROPICS** JIM CHESTER
Ski 'n dive a magic place in the mountains

- 74 **CONCH REEF FOR CONTRAST** BILL BARADA
An untamed Florida reef

EQUIPMENT

- 44 **SCUBAPRO'S PROFLEX** BONNIE J. CARDONE
A good-looking, comfortable wetsuit

- 47 **PRO DIVE FIN ROUNDUP** HOWARD HALL
Everything you need to know to choose and use fins for scuba

PERSONALITIES

- 68 **JERRY GREENBERG: UP-CLOSE AND CANDID** RICK FREHSEE
A top underwater photographer reveals tricks of the trade

FOREIGN TRAVEL

- 79 **CEMETERY CAVE** BRUCE NYDEN
A trip into Nature's marine catacombs

- 94 **AMBERGRIS CAYE** TOM MOUNT
A tropical retreat in Belize

- 96 **ST. THOMAS' WATERSPORTS CENTER** GERI MURPHY
A thriving resort at Sapphire Bay

WRECK DIVING

- 80 **WRECK OF THE GEORGEANNA** KEVIN ROONEY
Recovering relics from Civil War blockade runner

- 88 **BARBADOS AND THE STAVRONIKITA** PAUL J. TZIMOULIS
The wreck that made a dive resort

DEPARTMENTS

- | | | |
|---------------------------|-----------------------|------------------------------|
| 19 FILM FESTIVALS | 25 SCUBA EXAM | 66 FISH OF THE MONTH |
| 'N SYMPOSIUMS | 36 MEDIFACTS | 100 DIVER'S DIRECTORY |
| 22 SHOWS 'N EVENTS | 60 TECHNIFACTS | |



COVER

Dr. Sylvia Earle trains in the JIM Suit in Commercial Diving Center's tank, Wilmington, CA. She wore the suit for her 1250 foot open ocean dive last September. Photograph by Geri Murphy.

SKIN DIVER MAGAZINE, (ISSN 0037-6345) © Copyright 1980 by PETERSEN PUBLISHING COMPANY. All rights reserved. Published monthly by Petersen Publishing Company, 8490 Sunset Blvd., Los Angeles, California 90069. Second class postage paid at Los Angeles, California, and at additional mailing offices. Single copy \$1.50. Subscription inquiries phone (213) 657-5100. Subscription rates: U.S. Possessions one year \$10.95, two years \$19. All other countries one year \$13.95, two years \$25. CONTRIBUTIONS: Should be mailed to 8490 Sunset Blvd., Los Angeles, California 90069. They must be accompanied by return postage and we assume no responsibility for loss or damage thereto. Any material accepted is subject to such revision as is necessary in our sole discretion to meet the requirements of this publication. Upon acceptance, payment will be made at our current rate, which covers the author's and/or contributors right, title and interest in and to the material mailed including but not limited to photos, drawings, charts, and designs, which shall be considered as text. The act of mailing a manuscript and/or material shall constitute an express warranty by the contributor that the material is original and in no way an infringement upon the rights of others. CHANGE OF ADDRESS: Six weeks notice is required to change a subscriber's address. Please give both old and new address and label. Mail to P.O. Box 3295, Los Angeles, CA 90028. POSTMASTER: Please send form 3579 to Skin Diver Magazine, P.O. Box 3295, Los Angeles, California 90028.

The Aqua-Tux by Henderson... Quality never felt so good.



When we designed the Aqua-Tux we pulled out all the stops. The best material, the best zippers, and all the extra touches that you'd expect in a quality suit—a suit so luxurious it had to be called Aqua-Tux. A suit with so many outstanding features we can only list a few, such as a wrap around Velcro® collar, welded seam ends, Rubatex G-231 neoprene, bent knee comfort design, triple cemented seams, heavy-duty Dacron® thread, YKK molded tooth zipper with corrosion-proof slider, and 5 zippers for easy entry. But don't just read about it, go see one at your local dive shop and step into diving's luxury wet suit—The Aqua Tux by Henderson.



DEDICATED TO SERVICE
AND QUALITY

Write for your brand new
full-color catalog.

BUCK & SASSAFRAS STS. MILLVILLE, N.J. 08332 (609) 825-4771



NEOSPRENE

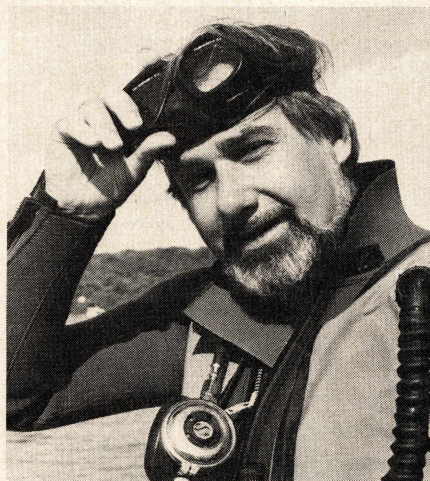
SDM Editorial

BY THE PUBLISHER

Four years ago Fawcett Books published a paperback novel describing a mortal struggle between marine environmentalists and whale hunters. In this sea-going melodrama entitled, *Leviathan*, a team of film making ecologists become outraged over the rapidly dwindling whale population of the world and decide to single-handedly declare war on the whaling industry. First, they immobilize two Japanese whaling ships by fastening limpet mines to their hulls while at anchor in Yokohama Harbor. Next, the whale warriors slip away in their research ship and cruise to Antarctica for a showdown with the Russian whaling fleet. Armed with a helicopter, a two-man submersible, thermal bombs and limpet mines, the gun-toting environmentalists attack a giant Russian factory ship which is engaged in the grisly business of hacking up whale carcasses.

Sound like an outrageous plot? Perhaps, but this purely fictitious novel could very well be a premonition of future events. There is a real life struggle going on between marine conservationists and the whaling industry. For more than three decades marine scientists and environmentalists have been vigorously protesting the continuing slaughter of the world's whale population. Two hundred years ago whale hunting was a more evenly matched competition between whales and men using sailing vessels, longboats and hand thrown harpoons. The whales had a far better chance for survival. Today, whales are hunted and killed by a mechanized flotilla of high speed ships using radar, sonar and radio communications. Mounted on the bow of the modern day killing ship is a powerful cannon which fires a 150 pound harpoon, armed with an explosive head. The grenade-tipped harpoon buries itself deep into the body of the victimized whale and then explodes with dynamite force. The poor whale dies an agonizing death of massive hemorrhaging over the next hour or more. This relentless pursuit and merciless destruction has resulted in the death of over 20,000 whales annually and the near extinction of several species.

In their efforts to mount an effective campaign of protest, environmentalists have organized themselves into more than 20 different conservation groups which are struggling to make the public aware of the whale's plight. Their goal is to arouse sufficient public protest to generate political and economic pressures against the whale hunting faction. Amassing an army of protestors, these non-profit conservation groups have been putting steady pressure on the U.S.



WHALE WAR ON THE HIGH SEAS

Congress, the United Nations, and other world governments who condone and protect the whale hunters. These dedicated environmentalists have effectively mounted a full scale cold war against the whaling industry and have even called for an economic boycott of goods imported from Japan, Russia, Norway and other nations who permit whaling. Unfortunately, the killing of whales continues.

Not all of the struggle has been passive however. While scientists and conservation leaders have been grappling with this issue on a political level, a new group of activists have begun to emerge from the thousands of protestors who are clamoring for the abolition of whaling. Comprised mostly of younger and less patient environmentalists, these activists have begun to step up their fight against the whaling. In 1975 the Greenpeace Foundation launched its startling but effective program of confrontations on the high seas. Tracking the movements of whaling ships and organized whale hunts, these courageous men and women have provoked open sea confrontations at the exact moment of a whale kill. Greenpeace members would zoom in with a high speed inflatable boat and deliberately place themselves in the line of fire between the ship's harpoon gunner and the intended whale victim. These confrontations have become a popular media event for television, magazines and newspaper reporters and, they have been a source of public embarrassment for the whaling industry. Unfortunately, the Greenpeace confron-

(Continued on Page 14)

WHALE PROTECTION ORGANIZATIONS

Want to know more about how to save the world's few remaining whales? Contact one or more of the following organizations:

AMERICAN CETACEAN SOCIETY
P.O. Box 4416
San Pedro, CA 90731

AMERICAN WELFARE INSTITUTE
P.O. Box 3650
Washington, DC 20007

CENTER FOR ACTION ON ENDANGERED SPECIES
175 W. Main Street
Ayer, ME 01432

GENERAL WHALE
P.O. Box Whales
Alameda, CA 94501

GREENPEACE FOUNDATION
2326 W. 4th Avenue
Vancouver, BC
Canada V6K 1P8

MARINE ANIMAL RESOURCE CENTER
4002 West Prosper
Seattle, WA 98199

OCEAN TRUST FOUNDATION
312 Sutter Street
San Francisco, CA 94108

PROJECT JONAH
P.O. Box 40280
San Francisco, CA 94140

THE COUSTEAU SOCIETY
777 Third Avenue
New York, NY 10017

THE HUMAN/DOLPHIN FOUNDATION
P.O. Box 4172
Malibu, CA 90265

THE MARINE WILDERNESS SOCIETY
P.O. Box 943
Miami, FL 33165

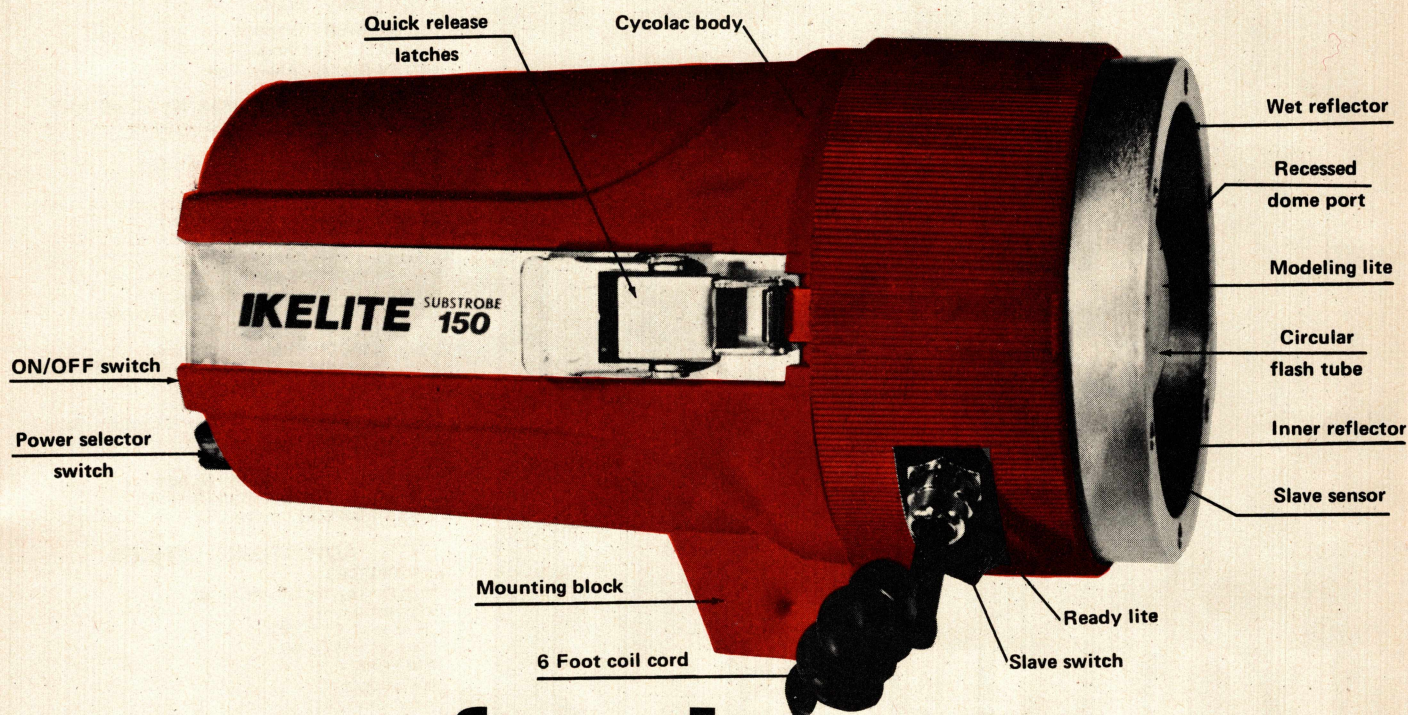
THE WHALE CENTER
3929 Piedmont Avenue
Oakland, CA 94611

THE WHALE PROTECTION FUND
1925 K Street, N.W.
Washington, DC 20006

THE WHALE MUSEUM
P.O. Box 1154
Friday Harbor, WA 98250

WORLD WILDLIFE FUND
1601 Connecticut Ave., N.W.
Washington, DC 20009

VERY FLASHY



features

SUBSTROBE 150

ENERGY RATING

Adjustable power output of 40 watt-sec., 75 watt-sec., 150 watt-sec.

POWER SOURCE

Interchangeable NI-CAD battery pack; standard recharge 15 hrs. Optional Quick Charger recharges in 3 hrs.

NUMBER OF FLASHES

@ 40 watt-sec.	approx. 600
@ 75 watt-sec.	approx. 300
@ 150 watt-sec.	approx. 150

RECYCLE TIMES

@ 40 watt-sec.	1.5 sec.
@ 75 watt-sec.	3.0 sec.
@ 150 watt-sec.	5.0 sec.

ANGLE OF COVERAGE

90 degrees

MODELING LITE

15 degree beam angle, 60,000 candle-power

MOUNTING BLOCK

Universally adaptable

CONNECTORS

Ikelite ICS or optional E/O


ikelite

UNDERWATER SYSTEMS

3303 North Illinois Street
Indianapolis, Indiana 46208

SUBSTROBE 75

ENERGY RATING

Adjustable power output of 40 watt-sec., 75 watt-sec.

POWER SOURCE

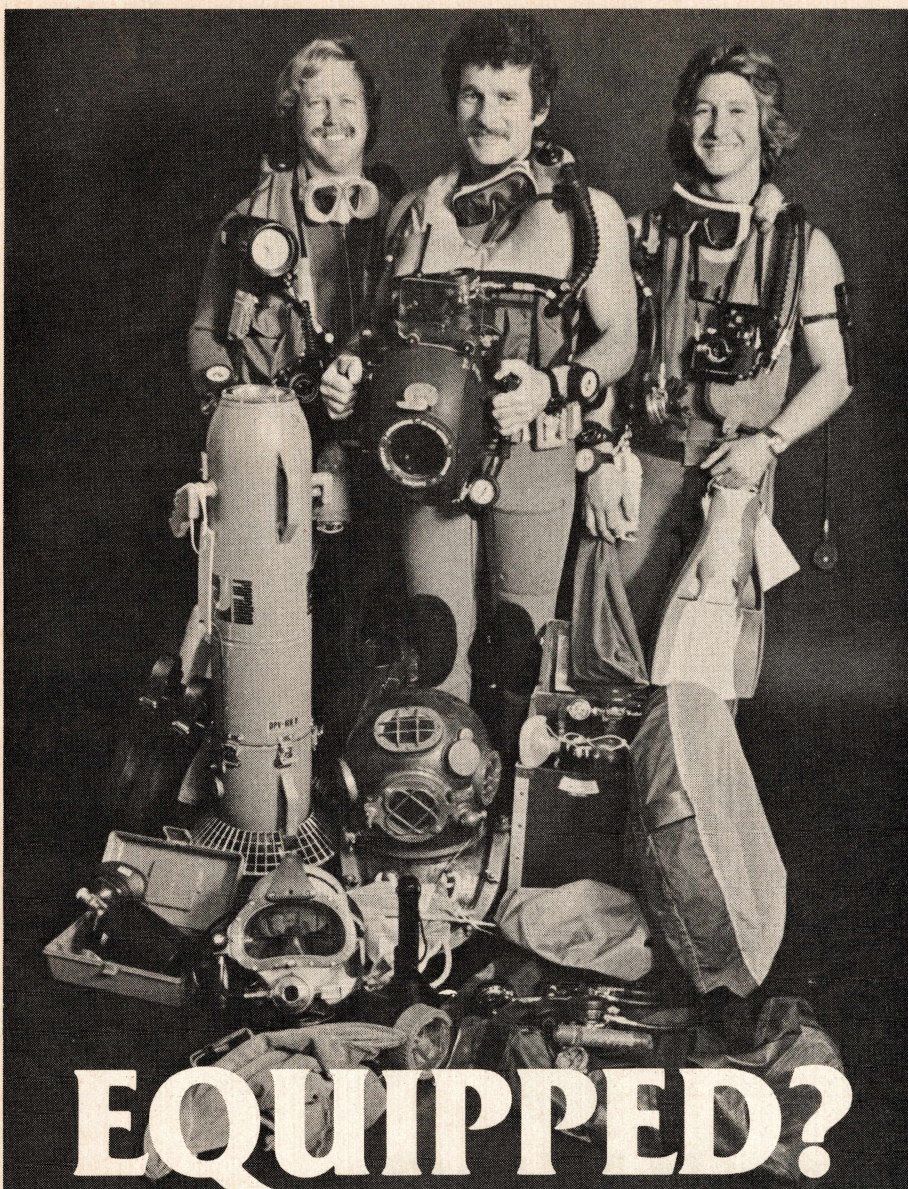
Non-removable NI-CAD battery pack; standard recharge 4 hrs.

NUMBER OF FLASHES / RECYCLE TIME

@ 40 watt-sec.	approx. 300/1.5 sec.
@ 75 watt-sec.	approx. 150/3.0 sec.

Other features of the Substrobe 75 are the same as the Substrobe 150.

CONTACT
YOUR LOCAL IKELITE DEALER
OR SEND \$1 FOR CATALOG



EQUIPPED?

We've got a lot more going for us than our Florida location. We're equipped with two diver training tanks, a half-dozen compressors, four research and diving vessels, three recompression chambers, an underwater video system, hydraulic and air powered tools, hot water diving suits, underwater cutting and welding equipment, dozens of underwater cameras and strobe systems, dozens of light weight commercial diving helmets. We offer courses at all levels of diving from Basic Scuba Certification to Underwater Technology, the longest and most intensive commercial diver-technician training program in the world. If diving turns you on you owe it to yourself to investigate Florida Institute of Technology. Write today for our free brochure. Florida Institute of Technology admits students of any race, color and nationality or ethnic origin and does not discriminate on the basis of handicap in admission or access to its programs.



Florida Institute of Technology

School of Applied Technology
1707 N.E. Indian River Drive
Jensen Beach, Florida 33457

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE _____ AGE _____
area code SD030380

STAFF

PAUL J. TZIMOULIS / Editor-Publisher
CONNIE JOHNSON / Managing Editor
ART SMITH / Art Director
BONNIE J. CARDONE / Senior Editor
KELLY O'LOUGHLIN / Assistant Editor
LESLIE BARROWS / Asst. Art Director
ELAINE VAILLANCOURT / Ad Service

CONTRIBUTING EDITORS

BILL BARADA / Environmental Editor
HILLARY HAUSER / Special Features Editor
JIM & CATHY CHURCH / Photography Editors
JACK MCKENNEY / Adventure Editor
CHARLES V. BROWN, M.D. / Medical Consultant
E. R. CROSS / Technifacts Editor
ELLSWORTH BOYD / East Coast Editor
GERI MURPHY / Special Assignments Editor

ADVERTISING SALES

LYNN EBRO / Atlanta
AL GOMBER / Chicago
JIM HALL / Los Angeles
BETSY ROYAL / New York

PETERSEN PUBLISHING COMPANY

R. E. PETERSEN / Chairman of the Board
F. R. WAINGROW / President
ROBERT E. BROWN / Sr. Vice President
DICK DAY / Sr. Vice President
JIM P. WALSH / Sr. Vice President, National Ad Director
ROBERT MacLEOD / V.P., Publisher
THOMAS J. SIATOS / V.P., Group Publisher
PHILIP E. TRIMBACH / V.P., Finance
WILLIAM PORTER / V.P., Circulation Director
JAMES J. KRENEK / V.P., Manufacturing
LEO D. LAREW / Treasurer/Assistant Secretary
DICK WATSON / Controller
LOUIS ABBOTT / Director, Production
JOHN CARRINGTON / Director, Book Sales and Marketing
MARIA COX / Director, Data Processing
BOB D'OLIVO / Director, Photography
LAWRENCE FREEMAN / Director, Subscription Sales
NIGEL P. HEATON / Director, Circ. Adm./Systems
AL ISAACS / Director, Graphics
CAROL JOHNSON / Director, Ad Adm
DON McGLATHERY / Director, Research
JACK THOMPSON / Assistant Director, Circulation

ADVERTISING OFFICES

LOS ANGELES

Ralph Panico, Western Ad Director
8490 Sunset Blvd.
Los Angeles, CA 90069
Phone (213) 657-5100

NEW YORK

Jim Rainsford
Eastern Advertising Director
Howard S. Plissner
Associate New York Manager
437 Madison Avenue
New York, NY 10022
Phone: (212) 935-9150

DETROIT

Edward McLaughlin, Detroit-Cleveland Ad Director
333 W. Fort St. Building, Suite 1800
Detroit, MI 48226
Phone: (313) 964-6680

CHICAGO

Dennis Banner, Chicago Ad Director
John Hancock Center
875 N. Michigan Ave., Suite 3131
Chicago, IL 60611
Phone: (312) 222-1920

CLEVELAND

Dewey F. Patterson, Branch Mgr.
Bond Court Building, Suite 1001
1300 East 9th Street
Cleveland, OH 44114
Phone: (216) 696-7900

ATLANTA

Dale Naef, Branch Mgr.
Four Piedmont Center, Suite 601
Atlanta, GA 30305
Phone: (404) 231-4004

DALLAS

Jeff Young, Branch Mgr.
800 W. Airport Fwy., Suite 201
Irving, TX 75061
Phone: (214) 579-0454

PETERSEN ACTION GROUP

Ralph Panico/Western Advertising Director (Los Angeles)
James J. Rainsford/Eastern Advertising Director, New York
Howard S. Plissner/Associate Manager, New York
Edward McLaughlin/Detroit Advertising Director
Dennis Banner/Chicago Advertising Director
Dewey F. Patterson/Cleveland
Dale Naef/Atlanta
Jeff Young/Dallas

Breakthrough Designs Breakthrough Materials

Sea Suits' New Aqua-Shed Wet Suits Beat The Wind Chill Factor.

Does a duck get cold? Never; a duck is always warm because his feathers dry out as fast as they get wet; a duck has no wind-chill factor to contend with. But when a diver is out of the water preparing for his next dive, he can get pretty cold even in a wet suit. Divers have a wind-chill factor to contend with because wet suits have a tendency to stay wet. ☆ BUT NO MORE! ☆ Sea Suits introduces a revolutionary new line of wet suits that shed water fast. Sea Suits Aqua-Shed wet suits keep you warmer because they shed water faster—faster than ever before—faster than any other wet suit. They're made of Sea Suits' revolutionary new Lycra/Nylon material, an ultra modern material that makes Sea Suits Aqua-Shed wet suits stronger, lighter, more flexible and more resistant to abrasion than ever before. And Sea Suits Aqua-Shed sheds water faster than ever before.

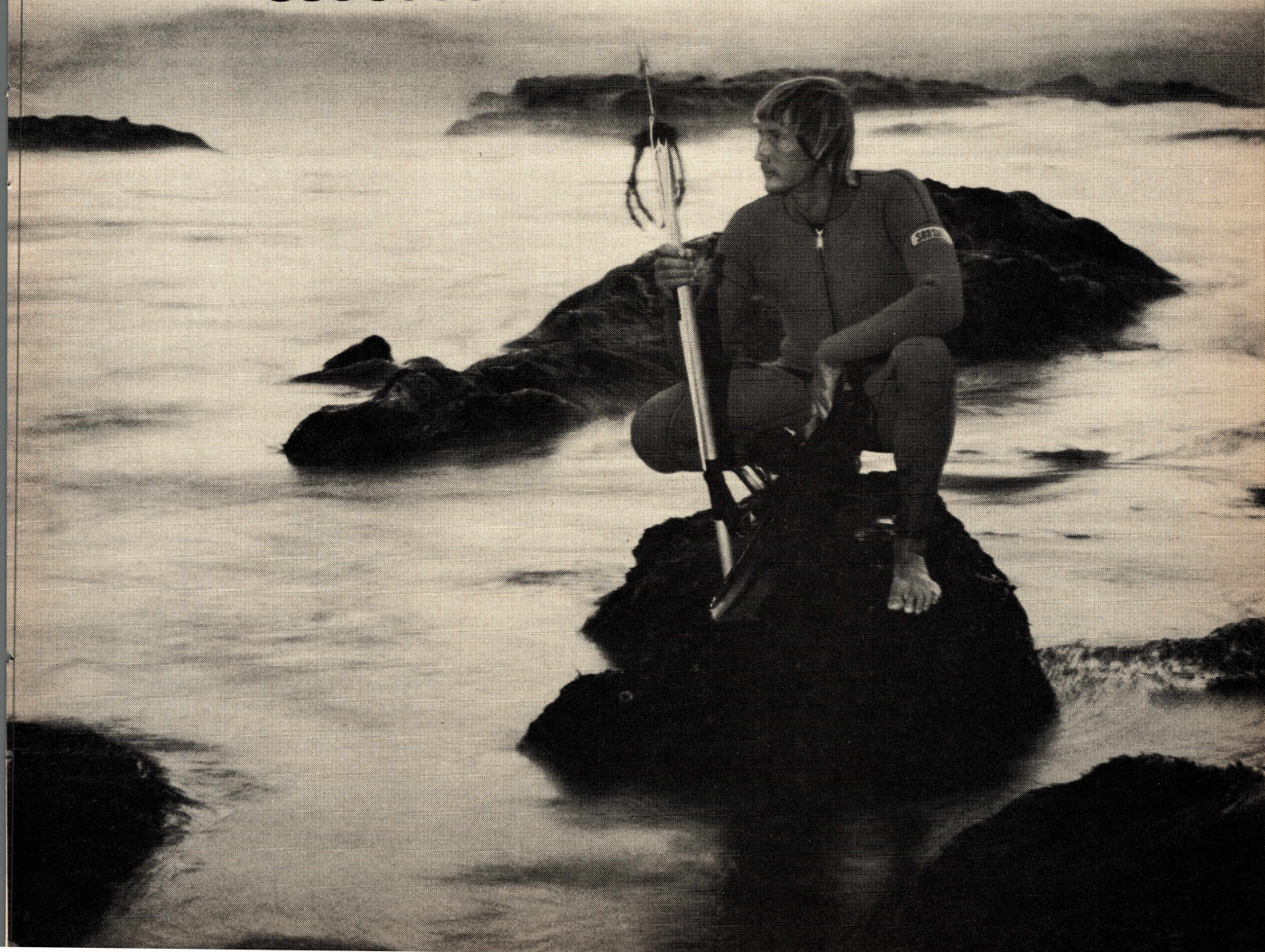
Aqua-Shed wet suits are a breakthrough for divers. They breakthrough the wind-chill factor to keep you warmer than ever before. Look for Aqua-Shed's distinctive sheen; it's a sign you're getting the most advanced material and diving's better wet suit.



seasuits

We know quality satisfies...it always has.

837 West 18th Street, Box 245
Costa Mesa, CA 92627/(714) 642-1912



The **JIM** Man's Deep Sea Space

How would it feel to walk along the ocean floor at some 2000 feet; to be free to move about and work with almost the same ease your wetsuit affords you; to spend up to 20 hours there if you chose; and then pop to the surface in minutes — with absolutely *no* decompression?

Take a look at the new JIM Atmospheric Diving Suit (ADS). This revolutionary diving suit, which brings to working divers just the advantages outlined above, is being utilized by an increasing number of offshore oil companies who obtain JIM from Oceaneering International, Inc., one of the largest diving companies in the world, and is keeping Oceaneering's Tom Earls, vice president in charge of technical development, mighty busy.

Some people are reminded of an outer space suit when they first see JIM, but outer space scientists have nothing on what our modern undersea technologists have wrought — right under our noses! Furthermore, the JIM ADS is ten times simpler in concept than an astronaut's suit, and infinitely more valuable to man's immediate needs; for JIM's function is to go down instead of up — down, where he can be of some real use to us here on our own planet. JIM divers venture thousands of feet down on the ocean floor, performing work that brings warmth, power, and transportation to all through the offshore oilfield industry.

Others who have seen the JIM, smitten with atavistic nostalgia, have equated JIM's looks with that of a knight in armor. The comparison fits. Just as his landlocked ancestor, the JIM diver dresses in protective armor; his attitude, bearing, and singleness of purpose is tough and relentless in the face of all obstacles. But the similarity ends there. In contrast to the Knights of the Round Table, the modern subsea gladiator's armor is extremely simple. Instead of the heavy, plated steel mail that pinched the early warrior and clattered and banged in battle, a JIM diver wears a comfortable magnesium shell as smooth and white as porcelain. And, his fight is toward man's survival instead of his destruction.

The one atmosphere suit that allows humans to work 2000 feet underwater

BY MAVIS HILL

The JIM suit was named after Jim Jarrett, the man who made the first experimental dives with an early version of the suit in Loch Ness, over 50 years ago. Invented by Joseph Peress in 1922, the suit was successful to 477 feet in those early dives. But, it has taken time, the acceleration of technology through two wars, and the modern need of undersea research to bring the suit into practical use and the revolutionary design it boasts today. Even the men who first dreamed of and created JIM in its present form are marveling at the suit's capabilities. JIM allows the diver to perform relaxed, efficient, intricate and extended diving jobs at depths to 2000 feet, even in frigid Arctic waters. When his work is completed, the diver comes straight to the surface. Decompression time? Zilch. Z-E-R-O.

Does this sound good to divers? You bet it does — and it sounds especially good to dive *contractors*, who are saving millions in effort and decompression times in maintaining offshore oilfield rigs and undersea systems.

When you consider that a 1000 foot job using a conventional lockout bell system must use 12 to 14 men and can take 31 days counting decompression times, and that the same job can be done in one day by two or three JIM divers, the advantages of JIM are very clear. That spells m-o-n-e-y to dive contractors and offshore oil companies.

Charles Sims, director of JIM's London-based manufacturer, UMEL (Underwater & Marine Equipment Limited), says JIM is basically a one-atmosphere pressure vessel, developed by UMEL as a practical means for divers to perform hands-on underwater jobs at depths beyond which conventional divers can work. UMEL is one of the largest suppliers of underwater equipment in Europe, and

since 1963 has supplied an ever increasing amount of equipment to the offshore oilfield industry — or for that matter to anyone who wishes to put equipment of any kind underwater, from river to full ocean depths. Says Sims, "UMEL is certified by the Ministry of Defense to Defense Standard 05-29, and all manufacturing processes are subject to strict quality control with design and manufacture to meet requirements of full classification by Lloyds Register of Shipping." Just so certified are JIM — and his siblings. Yes, JIM has a family, one member of which is WASP, developed close on JIM's heels for variants in types of jobs and/or terrain and the circumstances involved in the particular operation.

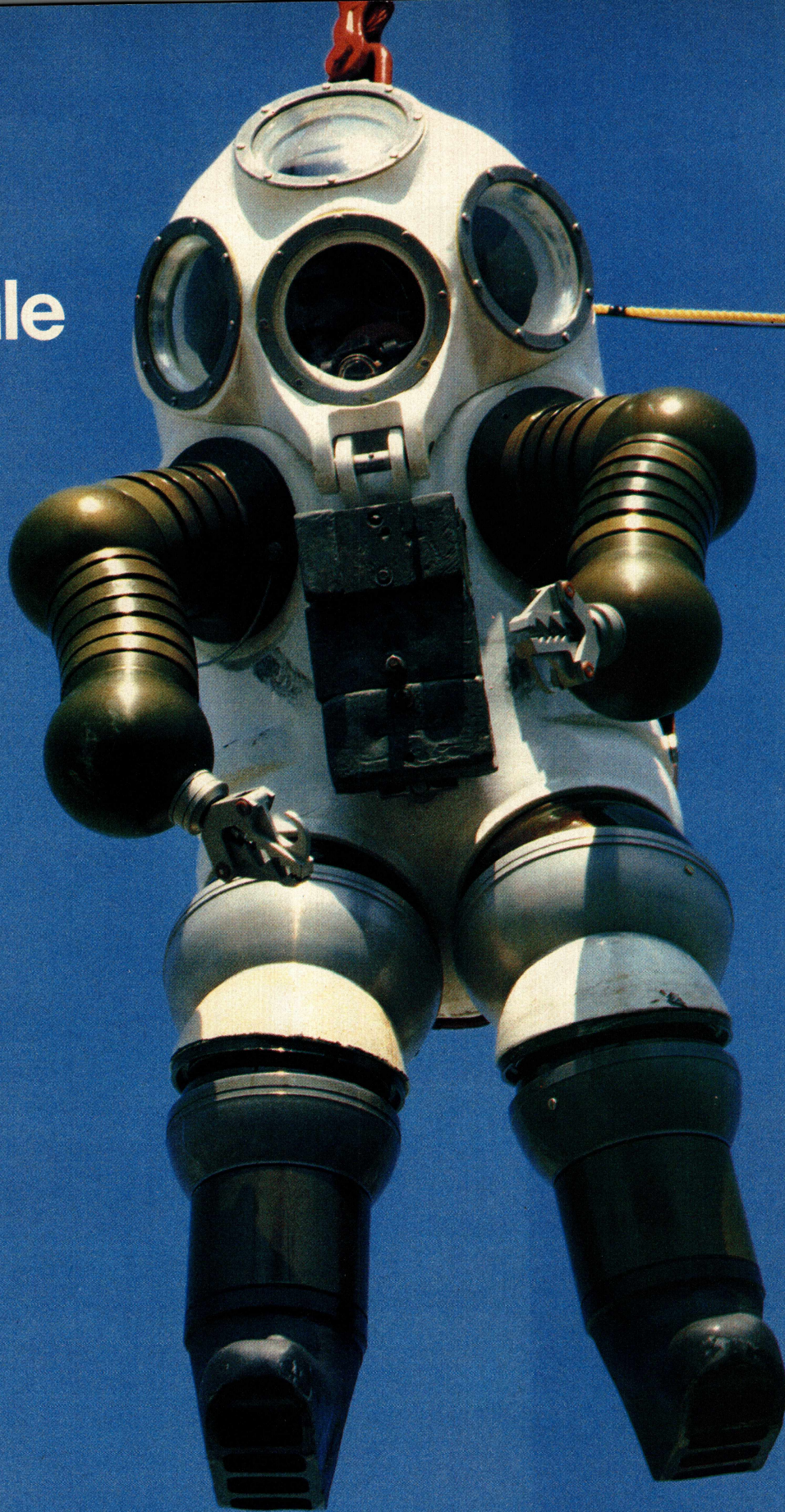
Whereas JIM is a walk-about, a suit that allows the diver to walk along the seabed, WASP, like a mermaid, has no legs, as such. The lower portion of WASP resembles a rigid sleeping bag, and the suit utilizes four thrusters for mid-water maneuverability. Both systems have unique, articulated arms with interchangeable mechanical manipulators which can be outfitted to accept a wide range of different tools. Both JIM and WASP extend to their occupants the courtesy of a constant one-atmosphere environment so they can work in safety and comfort for extended periods at depth.

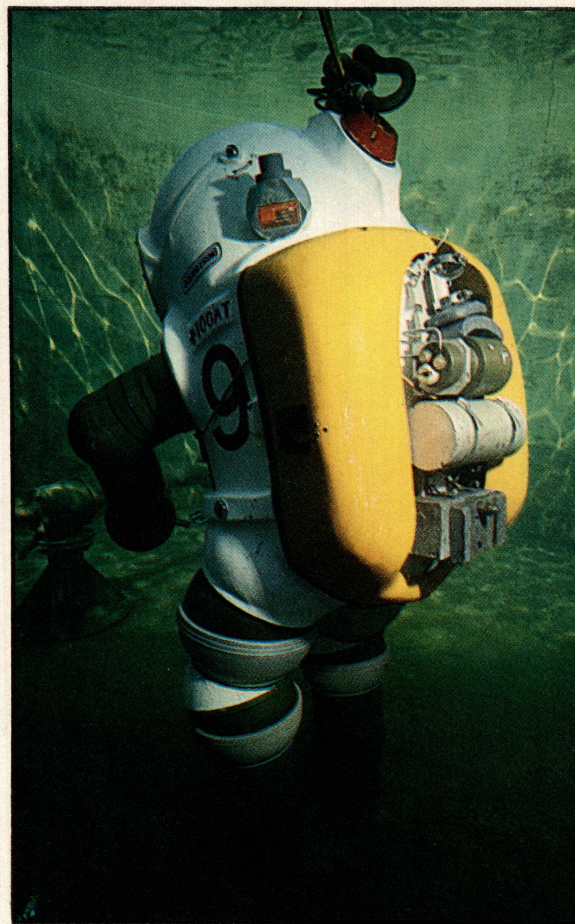
STRUCTURE AND SPECIFICATIONS

JIM is constructed of magnesium alloy RZ5 with a fiberglass epidermis. The helmet is a hinged dome that opens back for a feet-first entrance of the diver. The arms and legs are highly mobile and conducive to almost any movement the operator himself is capable of executing. Limb joints are articulated by means of fluid support (plain old vegetable oil) and

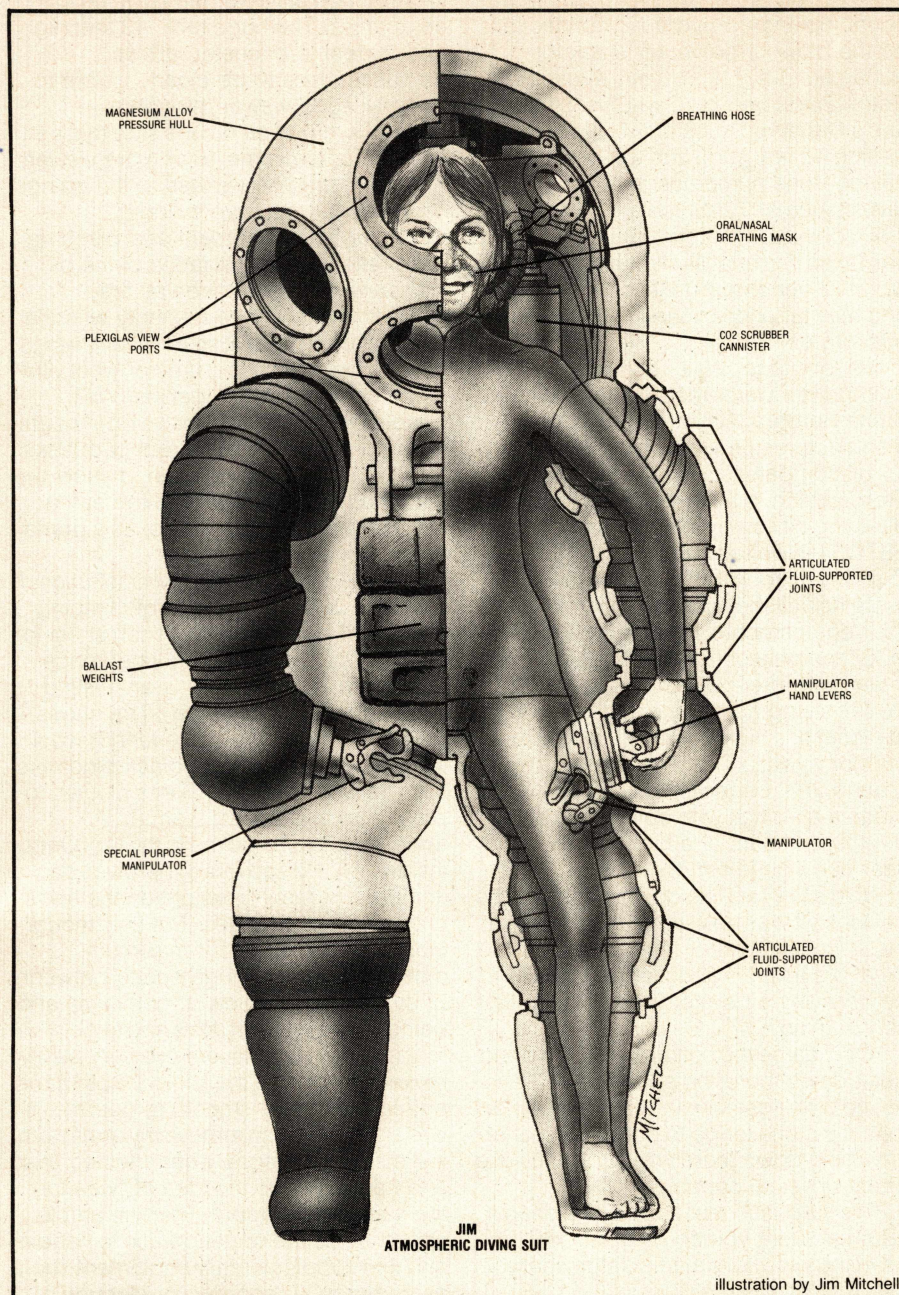
Photography by Geri Murphy

Capsule





Some people are reminded of an outer space suit when they first see JIM. But, JIM's function is to go down, not up. Divers in the suit venture thousands of feet down on the ocean floor. An early version of the suit was tested in Loch Ness more than 50 years ago. A one atmosphere suit, JIM allows the diver to spend up to 20 hours underwater and then surface without time consuming decompression. The diver inside the suit in these photos was Dr. Sylvia Earle, who was learning to use it at CDC in Wilmington, CA.



Basically the JIM suit is a pressure vessel with articulated arms and legs. The limbs are neutrally buoyant. JIM is 6'6" tall and 3'5" wide across the front. Topside, it weighs 910 lbs., U/W it weighs 60 lbs.

spacers. Each joint is completely universal with an angular movement of 40 degrees for maximum dexterity. An important feature is that the fluid is automatically maintained at a higher pressure than the surrounding water pressure to incorporate fail-safe security of movement. JIM's utter simplicity of structure provides a high degree of reliability, minimizing maintenance and spare parts requirements. Furthermore, operators of varying heights and weights merely need some adjustment of the suit's leg lengths and ballast weights, so with little thought to the size of the diver, almost anyone can be trained to utilize the system. Jim is 6 feet, 6 inches high, and weighs

approximately 1100 pounds on the surface, including the diver.

Sounds like a pretty heavy, unwieldy monster that would be difficult to transport and maneuver into position. Not on your life, according to John Balch, operation manager for the D.H.B. Construction Company, responsible for the logistics of all JIM projects. D.H.B., also based in England, handles all operations, including functioning, deployment, crew, and performance of the ADS, and is involved in the training of new operators for the JIM, as well. D.H.B. reminds us that the 1100 pound topside weight is about one-fifth that of conventional lockout systems — and

that's above the surface. JIM is comparatively light underwater, where his weight is reduced to 60 pounds!

Unwieldy? No. JIM, its winch/handling system, and its spare parts kit can be transported via helicopter to any offshore dive operation in record time. It is then assembled topside, the diver enters and the winch cable, which attaches to the top of JIM's dome, lifts it off the deck and into the water, where it is lowered to the bottom with ease. The support frame that cradles assembled JIM on deck takes up a mere 4 x 4 foot space.

LIFE SUPPORT SYSTEM

There are two independent units with a total duration of 20 hours life support, so that the only limiting time factor on the bottom is diver fatigue. The diver breathes normally through a carbon dioxide scrubber system by means of an oral/nasal mask. A control valve maintains the atmospheric pressure within, automatically feeding oxygen as needed. Two oxygen bottles are carried externally, and the scrubber unit contains 12 pounds of carbon dioxide absorbent chemical. All pressure systems are recorded so they can be monitored by the surface as well as by the JIM operator himself.

ALWAYS IN TOUCH

A hard-wire telephone connection to the surface is maintained via a lightweight combined communications and lift cable, but this cable can be disconnected if the diver deems it necessary, and untethered communication with a wireless unit is then used. Four plexiglass viewports allow the diver optimum visual capability in all directions.

DIVE IT LIKE A WETSUIT

Do you wear the JIM suit? Well, you do and you don't. Certainly, Walt Thompson, veteran and first pilot of the modern JIM, wears it. Walt dives it like a wetsuit — and loves it! He has probably spent as much or more time with and in JIM than he has in his own living room chair in the past several years. A soft-spoken, calm, extremely pleasant man who makes his home in Alaska, Walt's satisfaction with his lot in life is reflected through serene, twinkling eyes as blue as the Sea of Cortez. He makes the whole idea of diving JIM seem like a diver's holiday, but he's dead serious about his work. Among the innumerable ADS dives he has made, Walt was one of three divers who performed a series of successful JIM dives in the frigid waters of the Canadian Arctic a couple of years ago. Walt, who is employed by Oceaneering International, and D.H.B. divers Pete McKibbin and Tony Moore spent a total of 14¾ hours at 905 feet under 16 feet of

WORLD'S DEEPEST DIVING WOMAN

Last September Dr. Sylvia Earle spent three and one-half hours 1250 feet beneath the Pacific Ocean in the JIM Suit. The dive was not intended to set records but it did indeed: It was the first time the suit has been used for scientific rather than commercial purposes; it was the first time *anyone* had used the suit in the open ocean; it was the deepest dive a woman had ever made; and, it was the first time the JIM Suit had functioned without surface support.



Dr. Earle was accompanied on this particular dive by the two-man submersible, *Star II*. Cables linked her JIM Suit to the *Star II*, which was piloted by Bo Bartko. Also inside the sub was Al Giddings, who filmed the dive. Portions of this film will air in May as part of a two-hour special on ABC-TV. National Geographic will have a feature article on the dive, also in May.

The dive took place six miles off the Hawaiian Island of Oahu in an area known to be biologically interesting. Dr. Earle wanted to study bioluminescent organisms which were thought to inhabit the area, particularly the bed-spring-shaped bamboo coral. This unusual black and white banded coral "sprouts like whiskers" from the ocean floor, grows six to eight feet tall and pulses with a blue light. Dr. Earle succeeded in bringing back specimens of the coral for scientific study.

To prepare for the dive, Dr. Earle trained for one week at the Commercial Diving Center in Wilmington, CA. She likens using the JIM Suit to learning how to ride a bicycle: It requires mastering the art of ballast and weight as well as, "learning to push the right button."

Although the JIM Suit is usually attached by cables to a surface vessel, it can function independently for 24 hours with its own life support system. In an emergency, Dr. Earle could have dropped weights and returned to the surface without help.

Well known in the scientific and diving communities, Dr. Earle is a research biologist for the California Academy of Sciences in Golden Gate Park, San Francisco and chairman of the Board of Scientific and Technical Advisors of the non-profit Ocean Trust Foundation.

ice in 27.4°F. water. Most of this time was spent making up hydraulic connections on the blowout preventer stack for Panarctic Oils, Ltd., during a test program conducted by Can-Dive Services, O.I.'s Canadian subsidiary. JIM was just getting his feet good and wet at that time, having done numerous test and work dives since 1972. Since the 1976 dive, JIM's obvious worth to dive contractors has taken him and his siblings all over the world to perform installations, servicing, and maintenance of seafloor systems for offshore oil rigs.

Not long ago, Walt Thompson was doing deep water testing for VETCO in Santa Barbara, California. VETCO manufactures heavy blowout preventers for oil companies, and the "Christmas Tree," which is a valve/pipe labyrinth directing oil flow from subsea wellheads. VETCO (as well as Pan Arctic and others) is so involved with the use of the ADS systems that they are modifying much of their equipment to accommodate the ADS manipulator hand lever capabilities. It was with great pleasure that I found myself sitting across the table from Walt at dinner one night in Santa Barbara, and our conversation naturally revolved around JIM. Eager to find out just what made a man tick who dove to 1000 foot depths for hours at a time, year in and year out, I gave him the works.

What did it feel like down there? Did he get lonely? Was he warm in the JIM suit at those freezing water temperatures? What did he think about down there? Did he hear any air systems — hissing, that sort of thing?

"Oh," came the soft answer, "it's dead quiet down there; no sound at all," and no, he didn't get lonely. "I'm too busy for that. It's a challenge to complete the job I'm doing down there without the full use of my physical capabilities."

This surprised me, and I questioned it. "But I thought you could do almost anything with JIM's manipulators that you can with your hands?"

"Oh, yes," Walt explained, "but then you can't get in as close to what you're working on as you can with just your body." And then "No, I don't get cold — it's really quite comfortable down there — that is, unless I have to wait for equipment to be sent down. When I have to send up for something, perhaps I will wait a half hour or so; then I may get cold, because I'm not as active. In the Arctic I was quite warm." Then, "Ah — well, in the North Sea I had to wait below, and did get cold a couple of times."

SEEING IS BELIEVING

The agility a diver enjoys in the JIM suit was made evident at the underwater demonstrations Walt conducted with the D.H.B. company at the Commercial Diving Center in Wilmington, California. CDC had constructed a special, permanent demonstration and practice tank for the event, which was arranged

for representatives of the large oil companies. The huge tank, 13 feet high and 20 feet in diameter, allows demonstrations to be clearly visible to the privileged viewer through a generous, oval port on one side that can accommodate some 15 or more viewers with unobstructed witness to the goings on inside the massive cylinder. Undisguised amazement and pleasure were reflected on the faces of the oil company representatives as they watched Walt, whose dexterity with the manipulators made it so easy for them to conjure up mental pictures of what JIM could do for their companies. Walt performed pipe fitting jobs using intricate tools, turned valves and repaired leaks with the manipulators. Then to show the extreme maneuverability of the entire suit, he danced, jogged and, as a grand finale, turned somersaults.

During this three day demonstration, I was afforded the privilege of climbing into the JIM (topside!) and I can attest to its comfort. The gleaming innerspace suit with its hood agape is an inviting sight to any diver. Slipping off my shoes, I pulled on the heavy, knee-length wool sox and the unflattering black bloomers that are worn over the diver's clothes for protection and added warmth. A three-step ladder led me to the top. Once inside JIM, I discovered the diver can sort of sit or rest his weight on the suit's crotch if he so chooses. The unit, though close fitting enough for maximum mobility, leaves enough space between body and suit to allow a roominess and complete freedom of arms and torso. The manipulator hand levers are very easily moved about, and the joints in both arms and legs slippery-smooth to operate. It was quite simple to remove my arms from the suit appendages when I tested this; and here is where the idea of "wearing" the suit doesn't apply. There is ample space inside the upper portion to handle and use supplementary equipment such as cameras, a recorder, or electronic instruments, which are sometimes essential for inspection and recording work plans and results.

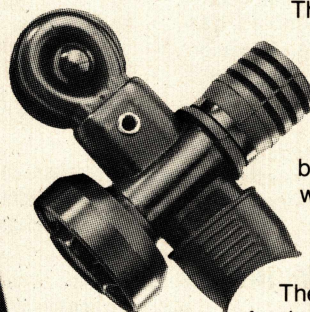
The only problem I encountered — strictly indicative of my gender — was in hoisting myself back out of JIM! Unless nature has by happenstance endowed a woman with the sinewy, strong torso and arm muscles of a man, her strength is mostly in her pelvic and leg muscles, and it is arm strength exclusively that must be put into play in lifting oneself from JIM. The diver must lift his weight straight up until a knee reaches the suit's hip area to allow a push up. Men execute emergence from JIM with ease, but women would find it extremely difficult, and probably impossible after hours of work below, without help from the outside. And I got no help that day — just triumphant laughs from the men — and that quiet, secret smile from Walt, which is characteristic of this deepsea man. 

TS '80

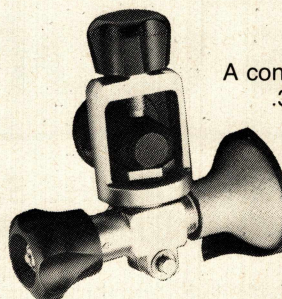
The Buoyancy Compensator of Tomorrow, Today

from TECHNISUB

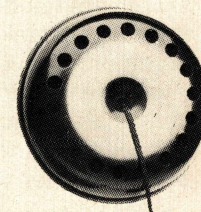
Buoyancy Compensation, Comfort & Safety.



The quick release, direct feed system allows easy buoyancy control . . . also ensures a fully charged emergency air cylinder.



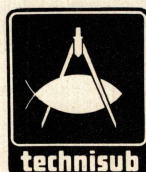
A constantly charged .335/liter 200 bar cylinder can deliver an emergency air supply or buoyancy addition that will let you reach the surface slowly . . . safely.



This pull operated dump valve can empty the fully inflated B.C. in 3-4 seconds, easy descents, easy to deflate after the dive . . .

The TS' 80—Durability: Abrasion resistant, PVC coated polyester fabric ensures Easy maintenance.

Leading manufacturers of diving equipment for professionals.



TECHNISUB S.p.A. Piazzale Kennedy 1D 16129 Genova - Italy, Telephone 010-530051, Telex 271643 TECSUB I
Sole Agents for U.S.A. - U.S. Possessions and Philippines - U.S. DIVERS CO., 3323 W. Warner Ave., Santa Ana, CA 92702

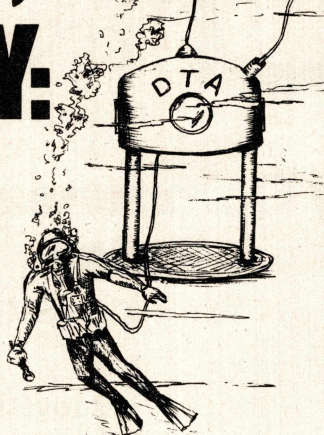
Not For Sale in U.S.A./U.S. Possessions and Philippines

MAKE IT PAY, WITH TRAINING BY:

Diving of every type required for commercial operations, in an area that gives more practical diving weather than anywhere else in the U.S.A.

Training by experts whose only ambition is to produce well trained commercial air/mixed gas divers to work for national and foreign diving contractors.

A curriculum that shows you exactly what you are receiving for your investment.



Member; Association of Diving Contractors, Association of Commercial Divers Education, Florida Association of Private Schools.

State approved for V.A. students Voc. Rehabilitation State and V.A.

DIVERS TRAINING ACADEMY, INC.

RFD#1 - BOX 193-C, LINK PORT
FORT PIERCE, FLORIDA 33450 (305) 465-1994

Send \$2.00 for all new 1980-81 Catalog offering complete air/mixed gas Commercial Diving Course.

DIVERS WANTED!!

INTERESTED IN TREASURE SALVAGING OR COMMERCIAL DEEP-SEA DIVING?

Divers are needed now in the U.S. and throughout the world! If you're thinking of making your sport a profitable profession, or you're a commercial diver seeking worldwide employment, then we can help! Available now for the first time is the most comprehensive worldwide diving job information package ever compiled. The package includes over 500 worldwide diving companies, addresses and phone numbers that offer you work from the Florida Keys to the North Sea.

THIS INFORMATION PACKAGE CAN GET YOU STARTED ON YOUR WAY TO WORLD TRAVEL & HIGH INCOME!

MAIL TODAY!



T-shirt light blue

- ☐ Please send my worldwide diving job info package(s). Enclosed is \$10.00.
- ☐ Please send your bonus package (Info package & Worldwide Diving Services Commercial Diver T-shirt). Enclosed is \$15.00 (Plus 75¢ postage & handling).
T-shirt size _____ SM _____ MED _____ LG _____ X-LG.
- ☐ Commercial Diver T-shirt alone \$7.00 (Plus 50¢ postage & handling).

PLEASE PRINT

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Worldwide Diving Services, P.O. Box 3132, W. Palm Beach, FL 33402

EDITORIAL

(Continued from Page 4)

tations have not prevented the whales from dying. An inflatable is no match for a whaling ship and its impact is about as effective as a mosquito buzzing around the head of a charging rhinoceros.

In 1978 things began to really warm up. This was the year the FBI arrested a group of Vietnam veterans who were preparing to attack and sink several Japanese and Russian whaling ships. Federal agents raided the Miami home of an ex-Navy diver and underwater demolition expert who was part of this environmental hit squad. In the garage, they uncovered a brand new two-man wet sub, two sets of expensive underwater rebreathers, and a cache of C4 plastic explosives. Agents also uncovered more than 30 photographs of Soviet and Japanese whaling ships which had been anchored in a harbor on the coast of Chile. The group was extremely well financed for its mission, and had paid cash for its submarine, dive gear and armament. The money had come from a secret bank account in the Bahamas and the group was believed to have been financed by an international environmentalists group. The hit squad's mission was to disable and sink the whaling fleet and save the lives of thousands of whales. In their eyes, the war against the whalers made more sense and was more justified than the war in Vietnam.

In 1979 whale activists achieved more success with the ramming and attempted sinking of a whaling ship 180 miles off the coast of Portugal. Armed with nothing more than a 789 ton converted fishing trawler, a conservation group led by Paul Watson punched a large, gaping hole in the side of a rogue whaling vessel called the *Sierra*. The group had carefully planned for this ramming on the high seas by filling the bow compartments of their trawler with concrete. Their target was the most hated whaling vessel in the world. Flying a Cypress flag and owned by an anonymous corporation, this notorious whale killer had been violating all conservation regulations and indiscriminately killing and butchering whales of all sizes and species. At that time, the *Sierra* had been credited with the death of over 25,000 whales.

Why the growing violence against the whalers? Frankly, the whale activists are fed up with world governments' total inability to control the unchecked butchering of these magnificent creatures. In 1946 the International Whaling Commission (IWC) was established for the purpose of regulating the whale industry, setting reasonable quotas and prohibiting the further decimation of certain endangered whale species. Much to everyone's disgust, the IWC has become little

(Continued on Page 98)

U. S. DIVERS... AQUA-LUNG® DEPTH GAUGES



7047
Depth Master Gauges

EXPERIENCE COUNTS

The World's Most Popular Depth Gauges

Quality, Performance and Dependability Guaranteed

The world's largest and oldest manufacturer of
sport, military and commercial diving equipment.



Jacques-Yves Cousteau
Chairman of the Board



U.S. DIVERS CO.

3323 West Warner Avenue • Santa Ana, CA 92702



A Subsidiary of Liquid Air Corp. of North America

Copyright 1980 U. S. Divers Co. Part No. 7577-76



THE GLORIOUS BRISTLE WORM



Above, those fluffy, delicate bristles are venomous.
Left, the bristle worm, commonly found on coral reefs.

The bristle worm is a fashionable undersea cousin of the common earthworm. It is a member of the phylum Annelida (segmented worms) and the class Polychaeta (many bristles). The bristle worm derives its common name from the rows of stiff white bristles that project out along both sides of its body. Ranging in length from approximately three to eight inches and longer, the bristle worm is commonly found on coral reefs throughout the Caribbean, Bahamas and West Indies.

The head and face of the bristle worm possess incredible character, easily likened to that of fictional space creatures. Shaped like a bulbous majestic crown, the head is equipped with eyes, sensory antennae, and a mouth. The face of the bristle worm is formidable because of a long, unicorn shaped tentacle located between its eyes. Just below the eyes is the mouth, formed by two disc shaped appendages joined at the top. Four short and smaller tentacles used for sensing food are located around the mouth. The bristle worm is a scavenger and grazes on coral polyps, algae and other invertebrates by enveloping the food with the balloon-like lips surrounding its mouth.

The body of the bristle worm is divided into small, identical segments. Each has a pair of limb-like appendages from which snow white bristles project. Clustered around each bundle of bristles are colorful gills. The bristles are beautiful to observe, but are the worm's defense mechanism. Like a row of poison tipped needles, they can penetrate the skin and cause severe pain. These clearly visible bristles discourage the largest of predators.

In addition to defense, the bristles are also used for locomotion. The bristles are brought forward, braced against the ocean floor and the body then contracts, pulling the creature ahead.

Although the bristle worm is considered to be a tropical touch-me-not, it is a lovely creature to observe and photograph. Some have pale orange or yellow bodies with deep, orange gills and head. The commonly seen light green bristle worm has chocolate brown gills. An exciting find is a bristle worm with reddish brown segments, brick red gills, and flaring white bristles.

Where else but in the sea could one find a variety of color and delicate detail in such an unlikely creature as a worm? »

**TEXT AND PHOTOGRAPHY
BY GERI MURPHY**

Inflation never felt so good

In these times of rising prices, it's refreshing to find something good about inflation - the Imperial Custom Bubble Suit. This suit is perfect for the cold water diver.

When inflated through the hose attachment at the chest, you're surrounded with a warm cushion of insulating air. With the neck, ankles, and wrists sealed, you stay warm, dry, - and very comfortable. And, with the inflation device, you can control your buoyancy when diving at any depth.

But there's more to this suit than just inflation; the economics of it are superb. It comes in a wide variety of colors and materials, with add-on options available so you'll never outgrow your suit. A convenient waterproof zipper across the shoulders makes entry very easy. And, of course, the Custom Bubble Suit is custom made, for a precise fit. See it yourself today at your nearest Imperial dealer.

***Warm and tough,
when you have the best***



IMPERIAL

For your copy of our new, colorful
1980 Imperial Catalog, send one dollar.

Imperial MFG. CO., P.O. Box 4119, Bremerton, WA. 98310, (206) 674-2316

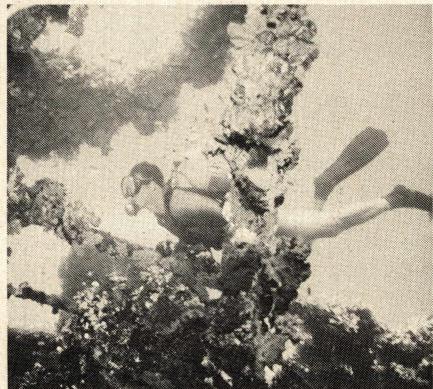


Film Festivals 'n Symposiums

SAN FRANCISCO FILM FESTIVAL

The San Francisco International Underwater Film Festival is scheduled for April 4th and 5th, at the Masonic Auditorium. Both, starting at 8:00 pm, audiences will be entertained by some of today's best U/W photographers.

Film highlights include a 300 foot dive



over the Andros Wall, an in-depth study of the elusive Manatee, and, of course, some footage of white sharks and whales. Also being screened is film on the Sea by Ernest Brooks and more.

Stan Waterman, Jack McKenney, Fred Calhoun are speakers, and Paul Tzimoulis will be the Master of Ceremonies.

All seats are reserved with tickets available at all Bass ticket outlets or by writing: P.O. Box 6410, Concord, CA 94524. The cost is \$6.50 per night.

MCKENNEY FILM FESTIVAL

A Jack McKenney Film Festival, sponsored by Dive N' Surf will be held at Union High School, Redondo Beach, CA, March 28. Featured will be Jack McKenney and three of his best films; *California Diving*, *God's Other World - The Red Sea*; and *Beneath Grand Cayman Waters*. Also featured will be a drawing for door prizes and a show of light comedy and original music by the singer/comedian Red Saber. For tickets call (213) 372-8423 or stop by Dive N' Surf, 504 N. Broadway, Redondo, Beach, CA.

EQUIPMENT EXPO

New England Divers' 7th Annual Equipment Exposition will be held April 20th. Representatives from dive equipment manufacturers will display the latest in dive equipment and answer questions. Demonstrations, displays and refreshments will be offered. For further information, contact New England Divers, Inc., Tozer Rd., Beverly, MA 01915.

Jerry Greenberg's SEA POSTERS

NEW!
TIGER
SHARK
POSTER!

PHOTO © 1969 Jerry Greenberg



Any 6 for \$15.00
Any 10 for \$20.00
Any 15 for \$35.00
All 18 for \$40.00

Send \$1 for color catalog

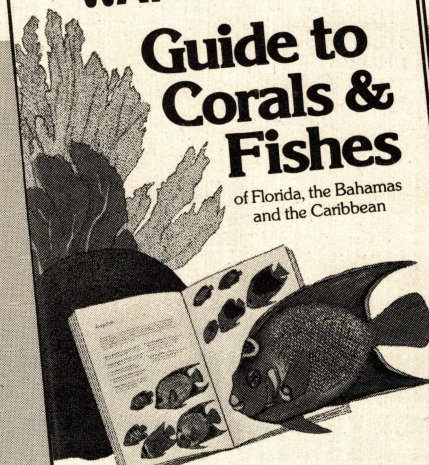
18"x24" full color reproductions suitable for framing.
(Mark your choice)

- GOLDEN WRASSE AND GORGONIA ☐
- SCHOOLING PORKFISH AND DIVER ☐
- GRAND CAYMAN U/W GUIDE ☐
- PENNEKAMP PARK MAP ☐
- HAPPY DOLPHINS ☐
- BONAIRE DIVE MAP ☐
- THE RADIANT REEF ☐
- LIVING CORALS ☐
- REEF ANGELS ☐
- SHARK! ☐
- TIGER SHARK ☐
- COZUMEL DIVE MAP ☐
- ROAMING THE REEF ☐
- EMERALD SEA FANS ☐
- FLORIDA KEYS DIVE MAP ☐
- BUCK ISLAND REEF MAP ☐
- VALLEY OF THE SPONGES ☐
- WORLD BENEATH THE WAVES ☐

SEAHAWK PRESS 6840 S.W. 92nd Street, Miami, Florida 33156.

WATERPROOF Guide to Corals & Fishes

of Florida, the Bahamas
and the Caribbean



IDAZ AND JERRY GREENBERG

DIVE WITH THE WET ONE

- This waterproof guide features corals and fishes of Florida, the Bahamas and the Caribbean.
- 260 species of corals and fishes are shown in full color in this 6"x9" book.
- There are 64 pages printed on waterproof, greaseproof, tear-resistant plastic with a rustproof binding.
- Send \$7.95 plus \$1.05 postage and handling to
SEAHAWK PRESS
6840 S.W. 92 Street
Miami, Florida 33156

HOOPER CAMERA

L.A.'S LARGEST PHOTOGRAPHIC CHAIN BRINGS
OVER 35 YEARS OF SERVICE AND DEPENDABILITY

IT'S NEVER TOO WET
FOR PICTURE-TAKING!

Nikonos III Outfit



Now Only
\$399.99

Nikonos III Body \$423.50
35/2.5 U.W. Nikkor Lens \$168.00
35/80 U.W. Viewfinder \$ 14.50
CC 30R Filter \$ 16.50
Rigid Lens Hood \$ 4.50
Flash Adapter \$ 20.00
Nikonos Hand Book \$ 10.50
List \$666.50

CALL OR WRITE TODAY!!!

TOLL FREE IN CAL. 800-232-2194
L.A. PHONE 213-877-7990
5216 Lankershim (at Magnolia)
North Hollywood, Ca. 91601



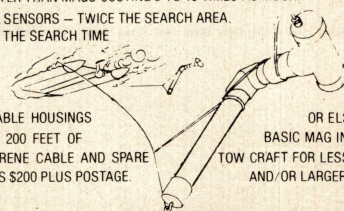
LIEBHAZET 2 PROTON MAGNETOMETER NOW WITH TOWABLE SENSORS

FIELD SENSITIVITY SAME ORDER AS CESIUM MAG

COMPARE PRICES, HARD DATA, CHART READOUTS. LAB OR FIELD GAMMA SENSITIVITIES. LAB OR FIELD TARGET SENSITIVITIES - 10 TO 30 TIMES GREATER THAN MAGS COSTING 5 TO 10 TIMES AS MUCH.

DUAL SENSORS - TWICE THE SEARCH AREA.
HALF THE SEARCH TIME

TOWABLE HOUSINGS
WITH 200 FEET OF
NEOPRENE CABLE AND SPARE
PARTS \$200 PLUS POSTAGE.



OR ELSE MOUNT
BASIC MAG IN BOAT OR
TOW CRAFT FOR LESS DISTANT
AND/OR LARGER TARGETS

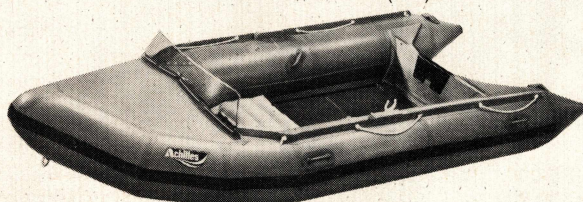
Archaeology or salvage - Detects up to 100's of feet. 1/3 gamma limit (5" screwdriver at 6', 1 pound pan at 13', car at 100'+) - Detection profile gives depth to target - Unique patented NULL SIGNATURE technique allows eyeballing of faint target traces - Recorder, earpiece & meter modes - Onboard or towed - Ocean or land searching - Basic mag price \$475 - For local dealers & other info, write M. L. Dalton Research, 6035 Aberdeen, Dallas, TX 75230. Phone 214-691-4925.

Rugged

Before you buy an inflatable, be sure its built to last. Be sure the hull is Hypalon® coated nylon and the seams are all hand glued and reinforced both inside and out. Be sure it has an inflatable keel for a smoother ride and that all fittings are solidly attached.

Achilles gives you all these things, plus, a price that makes Achilles your best inflatable value. If you compare you'll buy Achilles. They're designed to be better.

Achilles. 25 Branca Road, East Rutherford, NJ 07073, Phone: (201) 438-6400



*DUPONT

Underwater close-ups

Hydro Photo Cobra flash arm—Designed with 5 socket joints, each capable of bending 35° any direction, with stainless steel tension cable through the center for light source control. Allows you to get in close with both hands free. Fits most strobes. Please specify make and model. (19" or 27") **\$81.00***

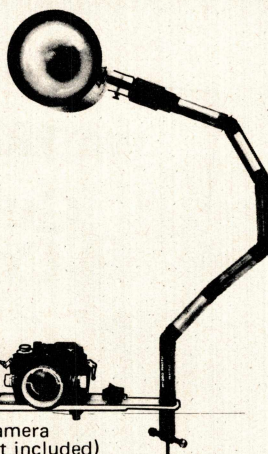
Hydro Photo close-up lenses—Glass element lenses screw directly into the 35mm Nikons; can be installed or removed underwater. Three lenses for varying subject distances: T1 (4 1/4"), T2 (8 1/2") or T3 (15") **\$40.50***
Optional focusing wand fixes exact focal length for T1 and T2 lenses **\$15.00***

*plus shipping

Prices subject to change without notice

HELIX®

325 West Huron Street, Chicago, Illinois 60610
312/944-4400



(camera not included)



UNDERWATER PHOTO EQUIPMENT CATALOG

featuring

- OCEANIC PRODUCTS • NIKONOS III • IKELITE •
- SUBSEA • AQUACRAFT • SONIC RESEARCH •
- HYDRO PHOTO • PENTAX MARINE • SEACOR •

LET US HELP YOU SELECT YOUR UNDERWATER PHOTO EQUIPMENT.

Please write for PRICE QUOTATIONS on U/W camera equipment, electronic flash units, lenses, & other accessories.

SPECIALISTS IN DIVING EQUIPMENT FOR 25 YEARS

WE STOCK MOST MAJOR BRANDS OF DIVING EQUIPMENT

Mail Orders Shipped Promptly. Send \$2.00 for Catalogs and Prices

- ☐ U/W PHOTO CATALOG
- ☐ AQUACRAFT CATALOG
- ☐ SCUBAPRO CATALOG
- ☐ SOUND WAVE SYSTEMS
- ☐ U.S. DIVERS CATALOG
- ☐ SEAQUEST PRODUCTS
- ☐ CUSTOM-MADE WET SUITS
- ☐ AFTER AIR COMPRESSORS

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

SUNLAND SPORTS/DIVE SHOP

8677 Wilshire Blvd. Beverly Hills, CA 90211 (213) 652-4990

FILM FESTIVALS 'N SYMPOSIUMS

PLANET WATER

Twenty years of safe diving will be the theme for the *Planet Water '80* U/W film festival, a three day weekend in Atlanta, celebrating NAUI's 20th birthday. The convention will consist of workshops, seminars, technical sessions and exhibits ranging from educational techniques and equipment repair to underwater photography and diving travel.

The festival and celebration will be held March 14, 15 and 16 in Atlanta, Georgia. For information or registration contact: Omorka Tours, P.O. Box 76721, Atlanta, GA 30328 (800) 241-7977.

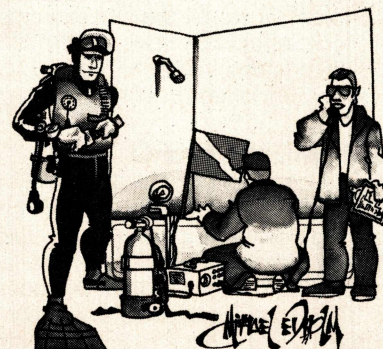
OUR WORLD—U/W X

Our World-Underwater will celebrate its tenth anniversary May 2, 3 and 4 in Chicago, where movies, exhibits and multi-media presentations will highlight the latest developments in underwater technology. Tickets for the weekend program, including the reception (two cocktails), all seminars on Saturday and Sunday, and the film program are \$22 before April 1 and \$27 thereafter. Individual tickets purchased separately are \$28 before April 1 and \$34 thereafter. Special Block (10) ticket prices are available to clubs and shops before April 1. For information write: Our World-Underwater X, Tickets, P.O. Box 4428, Chicago, Illinois 60680.

WELDING TRAINING

The Commercial Diving Center has increased the welding and cutting training to provide students a route to welding certification. Under the expanded program, students attend the welding facility for up to six hours a day, six days a week, gaining proficiency to qualify for the certification tests. Each student receives 118 hours of both surface and underwater welding/cutting training included in the tuition.

For further information, contact: Commercial Diving Center, 272 South Fries Ave., Wilmington, CA 90744, (213) 834-2501.

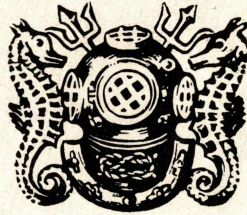


"Charlie! You've got about another half hour of decompression. Fred's bringing another bottle of air."

DIVING CONTRACTORS SAY COASTAL IS #1

LANCE SUNDOWN
salvage master

Puerto Madeiro
Chiapas, Mexico S.A.
Underwater Phone



Sundown
Deep Sea Diving Co.

Coastal School
of Deep Sea Diving, Inc.
320 - 19th Avenue
Oakland, CA 94601

Captain Mikalow:

I have been wanting to write a letter to you for the past four months. My records show for the past three years 36 graduates from your school have been in my employment.

I wish to compliment you and your instructors on the tremendous job you have been doing by taking novice students and turning them into an excellent and adaptable diving crew. I have been very pleased with their eagerness to further learn and adjust to our individual needs.

If I may suggest, I would have had employment for more graduates if they would have had their own hard-hat gear as some of our contracts are being subcontracted to different areas. When we split our gear in different ways, we are caught short.

If I had any complaint whatsoever, it would be the student's personal appearance that does not fit with the clientele they are working for.

Sincerely,

Lance Sundown
Lance Sundown
Salvage Master

Write today
for details
and application
form.



Avoid imitators!
No other school is a
branch or affiliate.

The Coastal School of Deep Sea Diving 320 29th Avenue, Oakland, CA 94601

Get the full story. Send \$2.00 for a copy of "Your Future in Deep Sea Diving." No obligation.

Enclosed find \$2.00 for handling. Please send my book.

SD-30

Name _____

Address _____

City _____

State _____ Zip _____

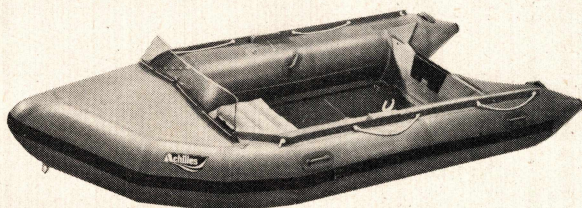


The Choice

Achilles is already America's second most popular inflatable. In just four short years. And for good reason. Achilles boats are the best values. They have the quality design and workmanship you want plus a price you can afford.

No longer are there just Avon and Zodiac from which to choose. Now there's Achilles. If you compare, you'll buy an Achilles because they're designed to be better.

Achilles. 25 Branca Road, East Rutherford, NJ 07073, Phone: (201) 438-6400



**A CAREER
AS A
PROFESSIONAL**

SCUBA INSTRUCTOR

The demand for both men and women diving instructors is growing rapidly. Many dive shops and resorts are having difficulty locating professional instructors who hold multiple skills to fill these positions.

AMERICAN SCUBA SCHOOLS OFFERS PROFESSIONAL
INSTRUCTOR RATINGS • 8 DAY ITC • EQUIPMENT REPAIR COURSE
PADI INSTRUCTOR TRAINING FACILITY



AMERICAN SCUBA SCHOOLS

Send \$2.00 for information booklet

5627 Arlington Rd., Jacksonville, FL 32211 (904) 744-4518



EAST COAST:

Tozer Road
Beverly, Mass. 01915
(617)922-6951

2945 N.E. Second Ave.
Miami, Florida 33137
(305)573-4600

9820 Dixie Highway
Kendall, Florida 33156
(305)667-4622

WEST COAST:

110 Embarcadero
San Francisco, CA 94105
(415)434-3614

11830 W. Pico Blvd.
W. Los Angeles, CA 90064
(213) 447-5021

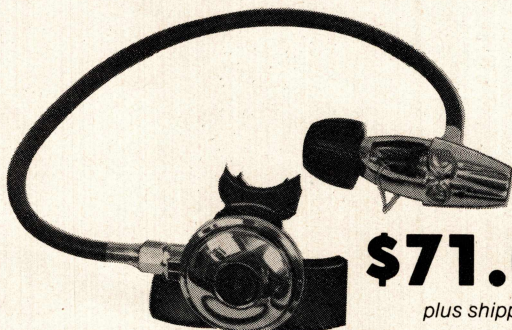
3860 Rosecrans Street
San Diego, CA 92110
(714)298-0531

8363 Center Drive
La Mesa, CA 92041
(714)462-4570

11009 First Ave. South
Seattle, Wash. 98168
(206)246-8156

2507 South 252nd Street
Kent, Wash. 98031
(206)878-1760

New England Divers March 1980 Bonus



\$71.00

plus shipping

U.S. DIVERS AQUARIUS REGULATOR is perfect for sport diving. Low maintenance first stage with single moving part. Additional low pressure port allows use of 2 L.P. accessories. Available at all of our stores or from our Catalog Division. Price does not include shipping cost and is valid in March 1980 only! OUR NEW 1980 CATALOG is available at all our stores or from the Catalog Division. Send \$1.00 for each copy.

New England Divers National Catalog Division

107 Tozer Rd., Beverly, MA. 01915 Telephone (617) 922-6970

Underwater Life Support Systems are potentially dangerous to a non-trained user. These include scuba tanks, regulators & buoyancy compensators. This ad does not constitute an offer to sell these items via mail order.

Shows 'n Events

March 1 3rd Annual Film Festival Shipwrecks III, World Headquarters Auditorium of Ford Motor Company, Dearborn, MI (Contact: C. E. Feltner, 166 S. Lafayette, Dearborn, MI 48124, phone [313] 274-9731)

March 1 Scuba Submersibles 4th Annual Banquet, Defiance, OH (Contact: Norm Demmel, Aquanetic Center, 203 Brownell, Napoleon, OH 43545, phone [419] 592-9876)

March 7 Deadline, U/W Photo Contest, Connecticut residents only (Contact: Gerry Lynn, 169 Webster Ct., Newington, CT 06111, phone [203] 667-1667)

March 2 The Stan Waterman Show, presented by Niagara Scuba Sports, 3:00 p.m., Grand Island Holiday Inn. \$3.50. (Contact: Don Benz, Niagara Scuba Sports, 2048 Niagara Street, Buffalo, NY 14207)

March 8 Sea Rovers '80/Boston Sea Rovers 26th Annual U/W Clinic, Boston University & John Hancock Hall (Contact: Bunky Hodge, 74 Beech St., Rockland, MA 02370 [617] 878-8710)

March 15-16 Man and the Sea 1980 Underwater Symposium and Film Festival, Abel Smith Lecture Theatre, Univ. of Queensland, St. Lucia, Brisbane, Qld., Australia (Contact: Man and the Sea 1980, PO Box 67, St. Lucia, Brisbane, Qld, Australia 4067)

March 21-22 4th Annual Man and the Sea Conference and Film Festival featuring Stan Waterman, Temple University and Oceanic Society sponsored (Contact: Dr. Robert Leahy, U/W Education & Research, College of H.P.E.R.D., Temple University, Philadelphia, PA 19122 [215] 787-8720)

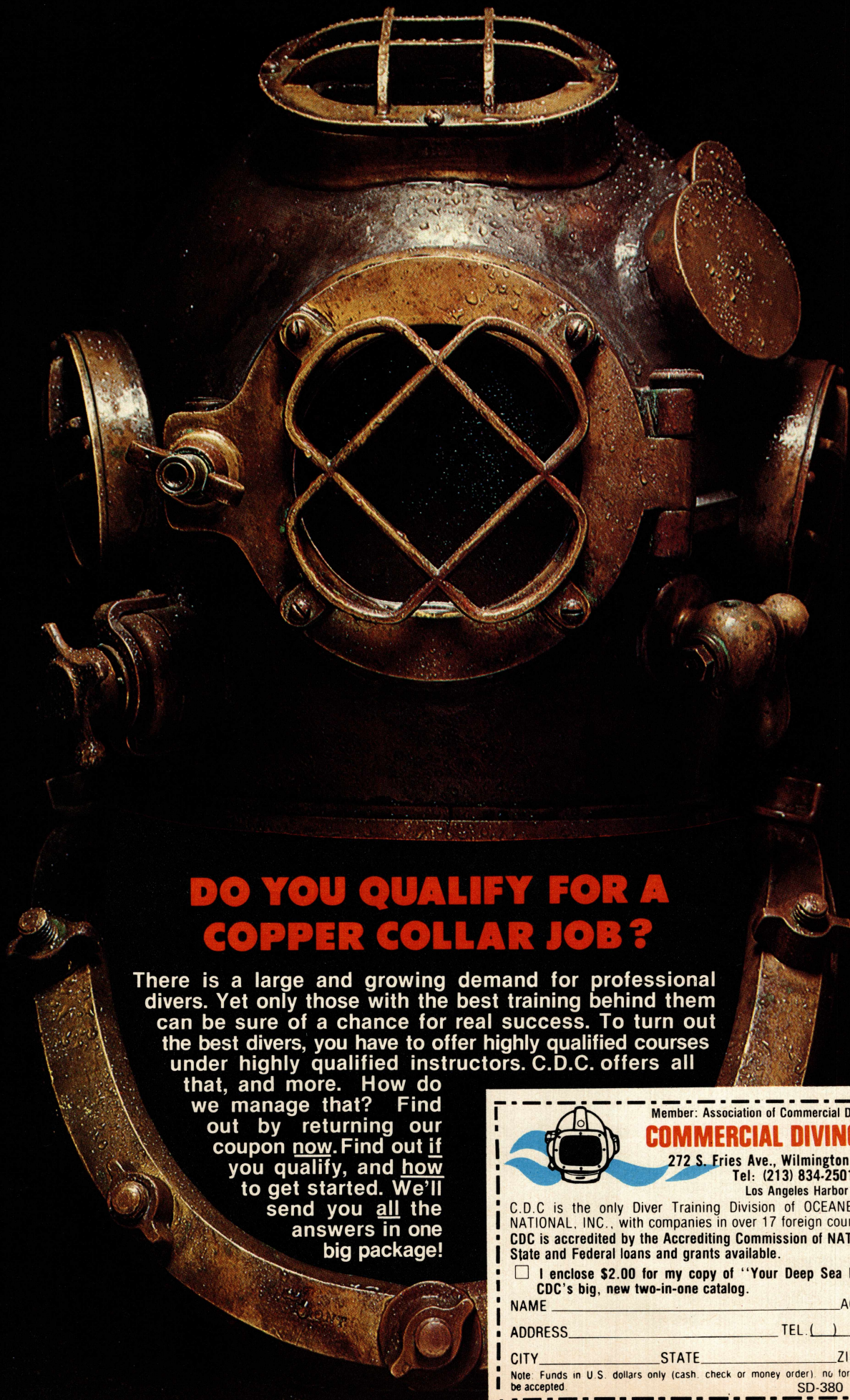
March 22 12th Annual Dance, Connecticut Council of Dive Clubs, Wallingford (Contact: Gerry Lynn, 169 Webster Ct., Newington, CT 06111, phone [203] 667-1667)

April 4-5 San Francisco Int'l Underwater Film Festival, Masonic Auditorium, 8 p.m. (Contact: Bass Ticket Agency or PO Box 6410, Concord, CA 94524)

April 18-20 International U/W Show, Constellation Hotel, Toronto, Canada (Contact: NAUI, PO Box 51 Etobicoke, Ontario, Canada M9C 4V5)

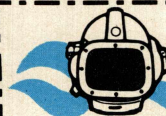
April 19 Underwater '80, U/W Film Review, John Hancock Hall, Boston, 8 pm; U/W Symposium, Howard University Science Center, Cambridge, noon-6 pm (Contact: Fred Calhoun, PO Box 291 Back Bay Annex, Boston, MA 02117)

September 27 NAUI U/W Film Review, John Hancock Hall, Boston, MA, 8 pm (Contact: Fred Calhoun, PO Box 291, Back Bay Annex, Boston, MA 02117)



DO YOU QUALIFY FOR A COPPER COLLAR JOB?

There is a large and growing demand for professional divers. Yet only those with the best training behind them can be sure of a chance for real success. To turn out the best divers, you have to offer highly qualified courses under highly qualified instructors. C.D.C. offers all that, and more. How do we manage that? Find out by returning our coupon now. Find out if you qualify, and how to get started. We'll send you all the answers in one big package!



Member: Association of Commercial Diving Educators

COMMERCIAL DIVING CENTER

272 S. Fries Ave., Wilmington, Ca. 90744

Tel: (213) 834-2501

Los Angeles Harbor

C.D.C. is the only Diver Training Division of OCEANEERING INTERNATIONAL, INC., with companies in over 17 foreign countries.

CDC is accredited by the Accrediting Commission of NATTS. State and Federal loans and grants available.

☐ I enclose \$2.00 for my copy of "Your Deep Sea Diving Career," CDC's big, new two-in-one catalog.

NAME _____ AGE _____

ADDRESS _____ TEL. () _____

CITY _____ STATE _____ ZIP _____

Note: Funds in U.S. dollars only (cash, check or money order). no foreign funds can be accepted.

SD-380

THE GROWTH OF A DIVER

One course in scuba diving does not make a diver. Experience does. Controlled open water experience is the best way to grow a healthy diver. To get the most out of your diving look into the fun and adventure of NAUI's continued education diving programs. "Scuba Diver" teaches the basics. A class of "Sport Divers" ventures out into speciality diving areas with expert training in various diving skills. An "Advanced Diver" program expands your new found skills, explores exciting dive sites and places you at the level of a sport diver "pro".

To become a complete diver, NAUI dive training offers you two branches of growth. Join a dive training

program and move up from Divemaster to Assistant Instructor to Instructor. Or become Dive Specialist. Become an expert in Photography, Wreck Exploration, Ice Diving, Rescue, Collecting, Hunting, Salvage or Equipment Repair. Wherever you want to go. Whatever you want to do. NAUI leads the way. Grow with NAUI. Experience the fun of growing a diver.



**LEADS
THE
WAY**

NATIONAL ASSOCIATION OF UNDERWATER INSTRUCTORS

(USA) 785 Colton Ave., Colton, CA 92324

DEPT. AB

(CANADA) Box 510, 10 Monet Ave., Etobicoke,
Ontario, Canada M9C 4V5

☐ I want to know more about NAUI "Diver Growth" continued education diving programs.

CHECK AREA(S) OF INTEREST

- | | | |
|--|---|---|
| ☐ Introductory Diving | ☐ Advanced Diver | ☐ Ice Diving |
| ☐ Skin Diver | ☐ Divemaster | ☐ Wreck Diving |
| ☐ Senior Skin Diver | ☐ Skin Diving Leader | ☐ Diving Leadership |
| ☐ Junior Scuba Diver | ☐ Instructor | ☐ Underwater Photography |
| ☐ Basic Scuba Diver | ☐ Assistant Instructor | ☐ Search and Recovery |
| ☐ Sport Scuba Diver | ☐ Cave Diving | ☐ Underwater Environment |
| ☐ Experienced Diver | ☐ Deep Diving | ☐ Hunting and Collecting |
| | | ☐ Professional Diving |

(Please print)

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

ASSOCIATION (store, school, club, etc.) _____

TELEPHONE _____

☐ FREE: Send me my 16-page Diving Book Catalog.

Scuba Quiz

Category: Dive Masks

By Dennis Graver

The dive mask is such a basic piece of equipment that not much thought is given to it, but a good base of knowledge will make the use of this simple item even simpler. Test your knowledge with the following questions. Answers are on the next page.

1. When viewed through a mask underwater, objects appear to be:

- ☐ A. One third larger
- ☐ B. One third smaller
- ☐ C. One fourth larger
- ☐ D. One fourth smaller

2. Fogging of a mask lens occurs because:

- ☐ A. Cooling causes condensation of water vapor in the air
- ☐ B. Water droplets in exhaled breath collect on the lens
- ☐ C. Body heat attracts moisture from outside the mask
- ☐ D. Water vapor combines with dirt on the lens to form a film

3. Defogging agents prevent mask fogging by:

- ☐ A. Reducing the surface tension of water
- ☐ B. Absorbing moisture from the air in the mask
- ☐ C. Preventing condensation of water from the air
- ☐ D. Forming a moisture barrier on the lens surface

4. Failure to equalize the pressure inside a mask during descent can result in:

- ☐ A. Distortion of the mask lens
- ☐ B. Ruptured capillaries in the eyes
- ☐ C. Eyes being forced deep into their sockets
- ☐ D. All of the above

5. Which of the following is the most important feature in a dive mask?

- ☐ A. Purge valve
- ☐ B. Low volume
- ☐ C. Nose pocket or fingerwells
- ☐ D. Wide field of vision

6. The proper way to don a mask is to:

- ☐ A. Place the strap on the back of the head and pull the mask down into place on the face
- ☐ B. Place the mask on the forehead, position the strap, then position the mask on the face
- ☐ C. Position the mask on the face, then position the strap on the back of the head
- ☐ D. None of the above

7. To test the fit of a mask, remove the strap and:

- ☐ A. Push the mask against your face and see if it stays in place
- ☐ B. Hold the mask lightly on your face and see if you can sniff it into place
- ☐ C. Push your face against the mask and see if air leaks out when you exhale
- ☐ D. None of the above

8. Which of the following is not part of recommended maintenance for a dive mask:

- ☐ A. Rinse in fresh water after use
- ☐ B. Store in a cool, dry place
- ☐ C. Treat periodically with rubber preservative
- ☐ D. Prolonged exposure to sunlight to eliminate bacteria

9. The best means of visual correction for a diver is:

- ☐ A. The use of contact lenses
- ☐ B. Prescription ground into the mask lens
- ☐ C. Prescription lenses bonded onto the mask lens
- ☐ D. Any of the above

10. To clear water from a mask that does not have a purge valve, a diver should:

- ☐ A. Lean head back, hold mask tightly against face, begin exhaling
- ☐ B. Lean head back, hold top of mask against face, begin exhaling
- ☐ C. Hold top of mask against face, begin exhaling, lean head back
- ☐ D. Hold mask tightly against face, begin exhaling, lean head back

Scuba Quiz

Answers: Dive Masks

1. A. One third larger. The refractive index of water is 1.33 because light travels slower in water than in air. The ratio of objects viewed in air compared to objects viewed underwater is 1:1.33. Thus, objects seen underwater are magnified by almost exactly one third.

2. A. Cooling causes condensation of water vapor in the air. The amount of moisture in the form of water vapor that a given quantity of air can contain is determined by temperature. As temperature of air decreases, it retains less water. The excess moisture condenses into a liquid.

3. A. Reducing the surface tension of water. Droplets of water tend to bead up because of the surface tension found in liquids. Millions of little beads form the translucent film we call fog in masks. By reducing surface tension, condensed water cannot bead and flows off the mask lens as a sheet.

4. B. Ruptured capillaries in the eyes. When a squeeze occurs, pressure is trying to reduce the volume of an air space. The body, being primarily liquid, transmits the surrounding pressure and also tries to compress the air space. This pressure on the eyes can be severe, but can be avoided by simply exhaling into the mask to equalize the pressure inside with the pressure outside.

5. C. Nose pocket or fingerwells. Nearly all divers need to block the nostrils in order to equalize pressure in the ears during descent. Access to the nose to allow sealing of the nostrils for equalization is very important and special consideration should be given to this feature when selecting a dive mask.

6. C. Position the mask on the face, then position the strap on the back of the head. Pulling the mask down onto the face can trap hair or hood beneath the mask sealing edge. With practice, you can position the mask while underwater, clear it, and slide the strap over your head — all with only one hand!

7. B. Hold the mask lightly on your face, then see if you can sniff it into place. Mask fit is critical for comfort and watertightness. If pressure on the mask is needed to seal it on your face, the fit is incorrect. When making a selection, determine which masks fit you before making any other determinations regarding features.

8. D. Prolonged sunlight exposure to eliminate bacteria. Sunlight will dry and crack rubber. Keep your gear out of the sun as much as possible. Smog isn't good for your equipment either. For prolonged storage, seal dry gear in plastic bags.

9. D. Any of the above. I have used them all. There are advantages and disadvantages to each. With contacts, one can see equally as well with or without a mask, but there is a risk of the lens coming off center or being lost. With lenses in the mask, normal vision is possible with the mask on and there are no drawbacks in the water, but it is an inconvenience to mess with eyeglasses whenever the mask is removed.

10. C. Hold top of mask against face, begin exhaling, lean head back. The whole point of this question is to point out that it is necessary to begin exhaling before tilting the head back. Many divers are unaware of this or simply forget. If you don't exhale first, water will run up your nose and cause discomfort.

If you got all of the questions correct, you must see very well underwater! If you missed a couple, perhaps you learned a point or two that will help you improve your use of the dive mask and increase your diving enjoyment. If you missed more than four, but don't have any problems using a mask, it may be because you knew what to do, but didn't know why. Hopefully you learned more about masks regardless of your score. May your outlook on diving be clear and bright.

REPUTATION

**AT D-I-T
IT'S A FACT
NOT A CLAIM...**

D-I-T is proud of its reputation for supplying top commercial divers to the industry. The **D-I-T** record of training excellence allows employers to hire our graduates with confidence. Over the past decade **D-I-T** has earned approvals and recognition from virtually all agencies involved in vocational education. Send \$2.00 today for our catalog. It lists all **D-I-T** approvals and memberships.

See how to enroll in a highly sophisticated six-month professional deep sea diving course which covers all facets of the industry. Our catalog contains full disclosures including course outline, employment statistics, instructor qualifications, tuition refund policy, standards of progress, financial assistance available, etc. An eligible institution for student loans and grants. Write today for details. Approved by Washington State Commission For Vocational Education For Veteran Training. Accredited by the Accrediting Commission of The National Association of Trade and Technical Schools.



D-I-T
DIVERS INSTITUTE OF TECHNOLOGY
4601 SHILSHOLE AVE. N.W. P.O. BOX 70312
SEATTLE, WA 98107
(206) 783-5542

NAME _____

ADDRESS _____

CITY _____

ST. _____

ZIP _____

TIPS

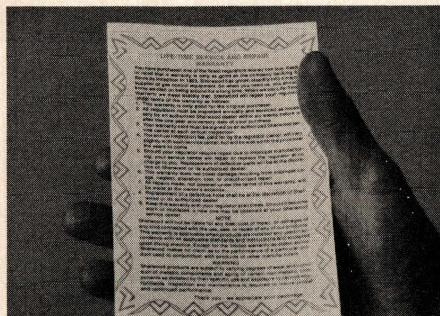
To Insure Perfect Scuba



IT PAYS TO READ YOUR WARRANTY

When you buy a piece of diving gear, you also buy a warranty. This piece of paper spells out the responsibilities of the equipment manufacturer to you, and your responsibilities to keep the warranty in effect. That's why you should ask to see the warranty **before** you buy any equipment. They are **not** all alike. Some only offer equipment protection and free service for a few years . . . others for as long as you own the equipment. Some require you to mail the equipment to the manufacturer . . . others list service locations everywhere. Some provide free parts replacement . . . others charge for parts.

After all, you compare the other features of the gear you buy. A warranty is a feature also, and in the long run the most money saving feature of any piece of gear.



Sherwood regulators include a Life-Time Service and Repair Warranty. A copy of the warranty is packed with each new regulator and printed in Sherwood scuba literature. Briefly, the Sherwood warranty covers repair and/or replacement of the regulator if it has been improperly manufactured, and replacement of any defective parts no matter how long you own the regulator. All you need to do is have the regulator inspected annually, and have your warranty card signed by any authorized Sherwood service center.

Next time you're at your local dive shop, ask to see the Sherwood warranty. Read it. Compare it. In return for the few minutes it takes, you can be paid back with years of diving enjoyment and lasting warranty protection.



SHERWOOD

SHERWOOD SELPAC CORP.

A HILL ACME COMPANY
PRECISION VALVES AND
REGULATORS FOR GAS CONTROL

120 Church St. • Lockport, New York 14049 USA

PHOTOS AND STORIES WANTED

SKIN DIVER Magazine is looking for both cover photographs and dive adventure stories.

Cover photographs may illustrate any dive activity anywhere in the world and can be taken either topside or underwater. These photographs should be dynamic, creative and original and have lots of color and action. If the photo illustrates a story suitable for publication in the magazine, so much the better. But, photographs depicting general diving scenes are also acceptable.

For each photograph published on its cover SKIN DIVER pays \$300.

Cover photographs should be vertical in format with room for the SKIN DIVER logo at the top and blurbs along the left side. Do not send color prints or negatives, only original color transparencies (slides) will be considered. Be sure to identify each slide with your name and address. A model release for every recognizable person in the photograph, as well as a caption describing the scene should accompany each slide.

Dive adventure stories with both foreign and domestic settings are also being sought. These stories should be non-fiction with plenty of dive action and excitement. Good graphics are essential: Either color slides and/or 8 by 10 black and white glossies are acceptable. SKIN DIVER pays \$50 per published page, on publication.

Divers may send photographs and manuscripts to: Bonnie J. Cardone, Senior Editor, SKIN DIVER Magazine, 8490 Sunset Blvd., Los Angeles, CA 90069. Please protect your slides with plastic sleeves and cardboard sheets. All material should be sent with a self-addressed, stamped envelope.

RDA ANNOUNCEMENT

Retailer: Petersen Publishing Company is pleased to announce a Retail Display Plan available to all retailers interested in earning a display allowance on SKIN DIVER who purchase the magazine from suppliers other than Curtis Circulation Company or the publisher.

To obtain details and a copy of the formal contract, please write to Progressive Magazines, Inc., Director of RDA, P.O. Box 807, Glen Rock, New Jersey 07452.

Under this plan, in consideration of your acceptance and fulfillment of the terms of the formal contract to be sent to you upon your request, you will receive a display allowance on all copies sold.

This plan will become effective with all issues of SKIN DIVER delivered to you subsequent to the date your written acceptance of the formal Petersen Publishing Company Retail Display Agreement is received and accepted.

HOSPER CAMERA

L.A.'s LARGEST PHOTOGRAPHIC CHAIN
BRINGS OVER 35 YEARS OF SERVICE
AND DEPENDABILITY TO YOU



ewa-marine

THE SPACESUIT FOR YOUR CAMERA
FLEXIBLE UNDERWATER and
ALL-WEATHER CAMERA HOUSINGS

• UW-F (For 35mm Reflex Camera)	\$ 46.95
• UW-FXC (For 35mm Reflex & Autowinder)	49.95
• UW-FPN (Nikon, Canon, Minolta & Motor)	54.95
• UW-FP (For Pentax 6x7)	59.95
• UW-H (For Hasselblad, Bronica, Mamiya 645)	74.95
• UW-S (Standard Movie Camera)	44.95
• UW-ND (Sound Movie Camera)	49.95
• UW-BRA (Beaulieu 16mm Camera)	74.95
• UW-BX (Bolex 16mm Camera)	74.95
Nikonos III w/35mm f2.5	339.99
Sekonic Marine II Meter	109.95
Sekonic L-86 Meter w/Housing	39.95
Sunpak Marine 28 Flash (F/Nikonos 111)	309.99
Toshiba Marine Flash	119.95

PENTAX 6X7 (FINEST U/W PHOTOGRAPHIC SYSTEM)
WE CARRY THEM IN STOCK
WE ARE AUTHORIZED IKELITE DEALERS
ALL MAIL ORDERS SHIPPED PROMPTLY
SEND \$1.00 FOR COMPLETE CATALOG & PRICES



TOLL FREE IN CAL. 800-232-2194
L.A. PHONE 213-877-7990
5216 Lankershim (at Magnolia)
North Hollywood, Ca. 91601



GIVE A
FRIEND
A CRAB!



The shy hermit crab is just emerging from a genuine miniature conch shell (BURSA GRANULARIS). An exciting pendant and a real conversation piece. Approximately 1 1/4" long.

Available in Sterling Silver - \$30.

or 14 kt Yellow Gold - \$100.

(Fla. residents add 4% sales tax)

For free catalog featuring our full line of exciting jewelry and collectible items:

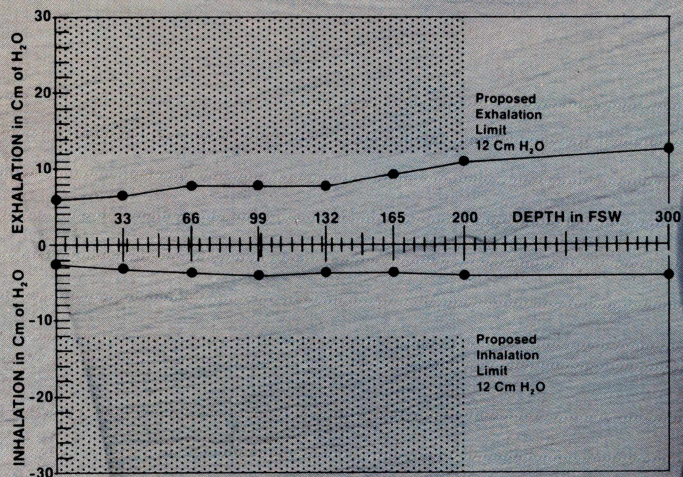
MARINE FOSSIL ARTS • P.O. Box 532
Longboat Key, Florida 33548

Hard Facts from the U.S. NAVY EXPERIMENTAL DIVING UNIT on the TEKNA 2100/2100B Regulators:

"... both regulators produced very low breathing resistance and breathing work rates at moderate Regulator Minute Volumes ..."

"Test results confirm these pilot assisted regulators are a significant improvement over any strictly, non-assisted conventional regulator now on the market ..."

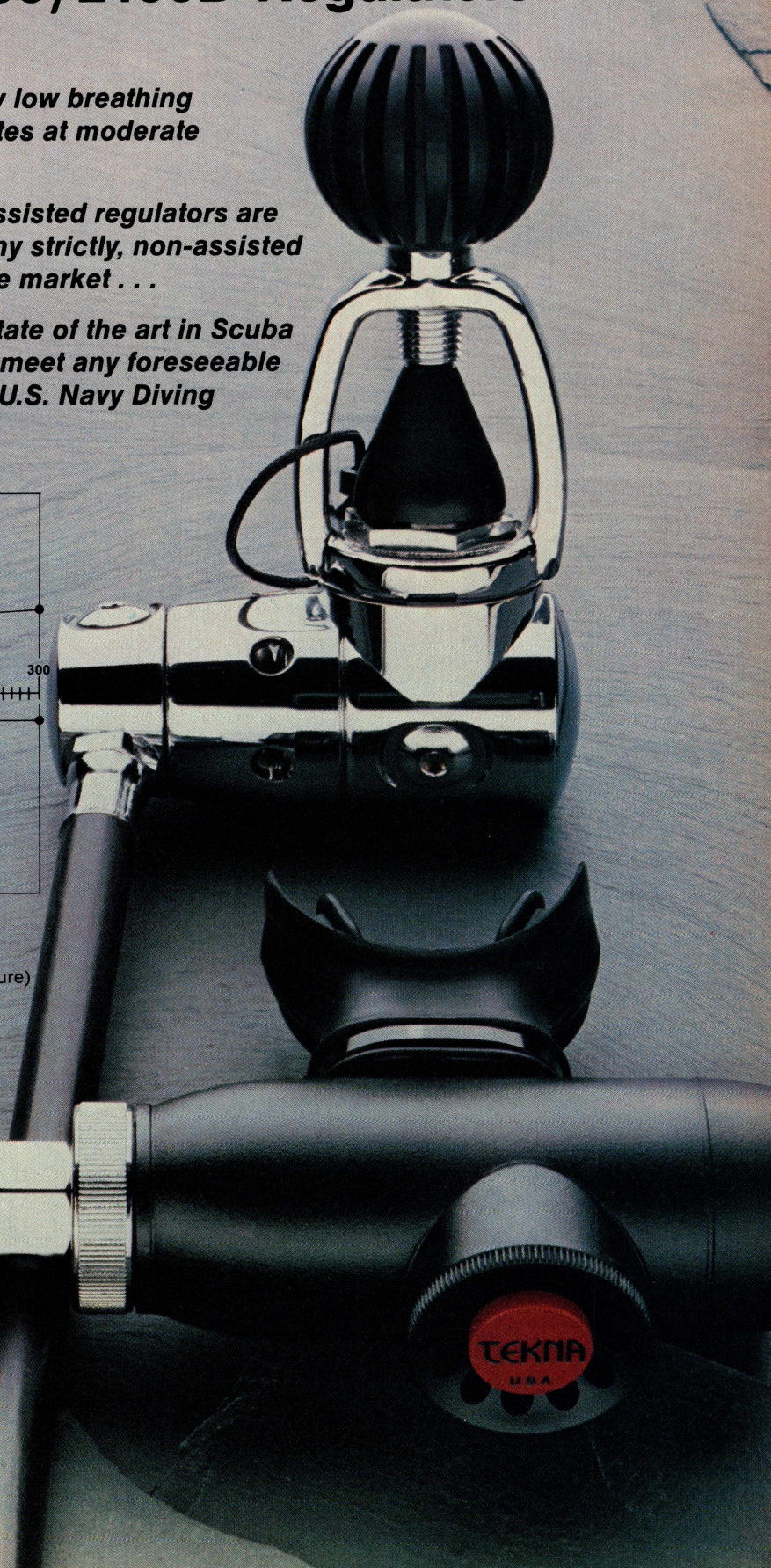
"These two regulators represent state of the art in Scuba Regulator design and both could meet any foreseeable performance requirement for the U.S. Navy Diving Program."



Breathing Resistance versus Depth
U.S. Navy Experimental Diving Unit
TEKNA Pilot Regulator Model T-2100/T-2100B—40 RMV
(20 Breaths/Minute, 2 Liter Tidal Volume, 1000 psi supply pressure)

TEKNA

3549 Haven Avenue, Menlo Park, CA 94025



Flash Techniques

The purpose of this article is to present the basics of using flash with standard lenses — ranging from 50mm to 28mm with 35mm cameras — at camera to subject distances of about three feet or more. We will follow-up with subsequent articles about the special techniques needed for wide-angle, close-up and multiple-lighting.

FLASH UNITS

Flashbulb units and electronic flash units (strobes) are often used to restore lost colors and details in U/W pictures, and to provide primary or fill light for the exposure.

The flashbulbs for U/W photography are the same as those used in air, and the flash sockets are exposed to the water. To combat the resistance at the wet socket, the triggering circuit often uses a 22½ volt battery and capacitor to supply the power needed to ignite the flashbulb.

Conventional strobe units can be placed in metal or plastic housings, and there are several submersible strobes designed specifically for U/W photography. Strobe systems are used more often than flashbulb systems because they are easier and less expensive to operate. Flashbulbs are cumbersome, especially when you are changing bulbs with cold fingers.

If a strobe flashtube and reflector are behind a flat housing port, refraction (bending of light at the port) will cause the U/W beam angle of the strobe to be only about three-fourths of the beam angle in air. And if you are using a lens wider than about 35mm with a 35mm camera, the beam of light may not

Bonnie Charles uses a YS-150 submersible strobe for U/W detail.



it's back to the basics

By Jim and Cathy Church



Still the best in underwater vision the Prismatic



A new leaf in underwater vision

The Farallon Prismatic Mask™ is to be the lightest weight, low volume wraparound, with perpendicular viewing planes for minimal distortion. Push button Mask-loks™ for instant ratchet-like head strap adjustment. The Prismatic Mask™ ... four features ahead in a forest of faceplates.



FARALLON OCEANIC 1333 Old County Road, Belmont, California 94002



Flash Techniques

be wide enough to cover the picture area of your lens. Therefore, we recommend that you use the plastic beam-widener attachment that is available for many conventional strobes.

Some submersible strobes have a reflector designed to provide a wide beam — often 90 degrees or more — and a dome port to nullify refraction, so the beam angle doesn't change underwater. The compact Sonic Research SR 2000 has a flat port, but an accessory beam-widener that slips over the front of the strobe is available.

SYNCHRONIZATION

Proper synchronization means that the shutter has completely uncovered the film at the time that the flash unit is providing light for the exposure. For mechanical reasons, most focal-plane shutters won't synchronize with strobes at shutter speed settings faster than 1/60 second. The brief burst of light from the strobe is too fast for the slowly-moving shutter curtains. If higher shutter speeds are required with flash, special FP (focal-plane) flashbulbs are recommended. Use the blue-coated bulbs (#6B or #26B) for flash to subject distances up to about four or five feet, and use the clear (#6 or #26) bulbs for longer distances. Front shutters (between-the-lens, interlens, iris or compur) will synchronize with either strobes or M sync flashbulbs at all shutter speed settings.

Check your camera owner's manual to see if you have a focal-plane or front shutter, and for the strobe and flashbulb synchronization information. And when purchasing flashbulbs, check the instructions on the back of the box to see if the bulbs are for FP (focal-plane shutter) or M (front shutter) synchronization.

AIMING THE FLASH UNIT

Because of the suspended particles in the water, the position of the flash unit is extremely important. When the light from the flash strikes suspended particles, it is reflected back to the light source — the flash unit. And if the flash unit is near the camera, the light is also reflected toward the camera lens. This backscattering of light is what causes the little bright spots sometimes present in U/W pictures. Each spot is an illuminated particle.

There are two basic techniques for minimizing the amount of backscattered light that reaches the camera lens:

1. Aim the flash at an angle of about 45 degrees to the subject so the light cast back from the particles isn't reflected

- directly toward the camera lens.

2. Aim the flash so the beam of light cuts just in front of the subject to avoid illuminating the particles between it and the camera lens.

The apparent distances you see underwater can cause you to miscalculate the aim of the flash unit. When you are looking at your subject through the camera's viewfinder, and aiming the flash unit by hand, your hand-eye coordination automatically aims the flash at the subject's position as you see it — an apparent position that is one-fourth closer than the subject's actual position. Thus, the beam of light may pass in front of the subject. Your picture will probably show an underexposed subject, but lots of little bright spots — the illuminated particles between the subject and the lens.

Therefore, when aiming the flash by hand-eye coordination as you look at your subject — without looking at the position of the flash unit — deliberately aim the flash at a point *one-third behind* the subject's apparent position as you see it. Two methods of assuring yourself that the flash unit is correctly aimed are to: Look at the relative positions of the flash and subject; and, attach a small dive light to the flash as an U/W aiming device.

FLASH EXPOSURE SETTINGS

The light from a flash unit is greatly reduced when the flash is used underwater for three basic reasons:

1. Much of the light from the flash will be absorbed and blocked and scattered by suspended particles as it travels through the water.

2. Because of the 45 degree lighting angle used to reduce backscatter, less light reflects back to the camera lens from the subject.

3. And because apparent distances

are used, the light must actually travel one-third farther than it appears to.

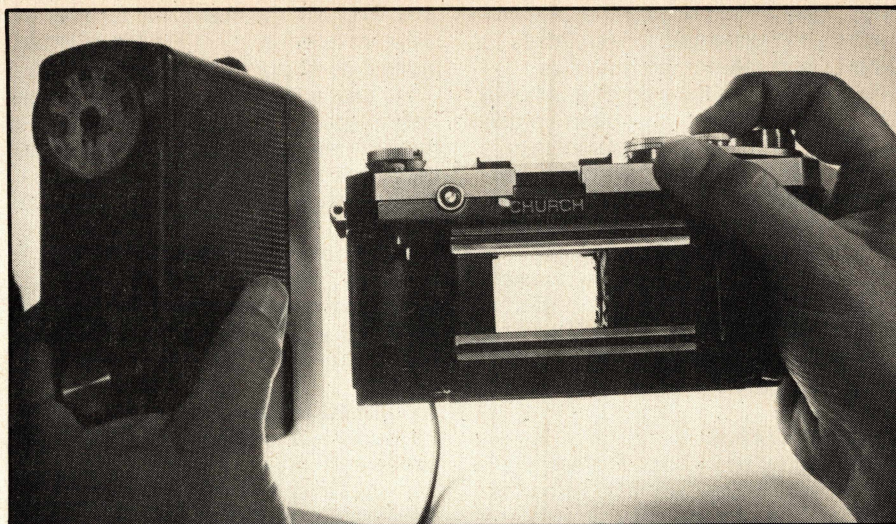
The correct flash exposure — in terms of the aperture for a specified flash to subject distance — can be estimated by using guide numbers, trial-and-error experiments or exposure tables furnished by the manufacturers.

Guide numbers are usually given in the owner's manual for a strobe and on the backs of flashbulb cartons. When divided by the flash to subject distance, the guide number gives an estimated aperture. An above-water guide number can be reduced to an U/W guide number for apparent distances by dividing it by a correction factor.

For fairly reflective subjects, such as the palm of your hand, try dividing the above-water guide number by three. For average subjects which reflect about one stop less light, divide by four. And for darker subjects, divide by five. This should give you a starting point for estimating that will be accurate within about one stop. Keep in mind that the shape of the reflector and port, your choice of subjects, lighting angles and water conditions will all affect exposure.

If you don't care for guide numbers, trial-and-error testing is quite satisfactory. Simply choose some typical test subjects and take a series of pictures on color slide film at all the different aperture settings of your lens. Project the processed slides and see which exposure settings worked best for different subjects and distances. You can now construct a simple exposure chart of apertures and flash to subject distances. Use a ballpoint pen and masking tape, or a label maker, to attach your exposure data to your strobe.

Manufacturers of submersible strobes often provide exposure tables — some in the form of decals that are attached to the side of the strobe — that show



SLR camera synchronization with strobe test: Remove lens and camera back, and aim camera and strobe at far wall. The film plane is uncovered when shutter and strobe are triggered.

suggested apertures for different film speeds and distances. These tables are usually accurate for the reflective subjects (such as the palm of your hand), but wider apertures must often be used for darker, less-reflective subjects.

However, any exposure table — constructed from guide numbers, trial-and-error or supplied by a manufacturer — is just an estimated starting point. We strongly recommend that you bracket your exposures: If the estimated aperture is f11, take exposures at f8, f11 and f16. One of these should certainly provide a pleasing exposure.

CHOOSING FILM

We usually use Kodak Professional Ektachrome 200 (ASA 200). With most submersible strobes, you can expose Ektachrome 200 at apertures of about f11 or f16 with a flash to subject distance of

wish to use. If the meter and table show different apertures, set the lens for the *highest-numbered* aperture of the two.

For example, you are photographing a basket sponge in clear, shallow water at three apparent feet. Your exposure meter reading is f11, but the flash exposure table reads f8. Because the f11 sunlight exposure calls for a smaller aperture (a higher f number) than the f8 flash exposure, the sunlight has overpowered the flash. Bracket around the f11 sunlight exposure — the flash will provide fill lighting to restore lost color.

AVOIDING DOUBLE IMAGES

Double images can occur whenever strobe and sunlight are closely balanced and shutter speeds of 1/60 second or slower are used. The brief flash of light from the strobe (perhaps only 1/1000 second) exposes one image on film, and

Flash Techniques

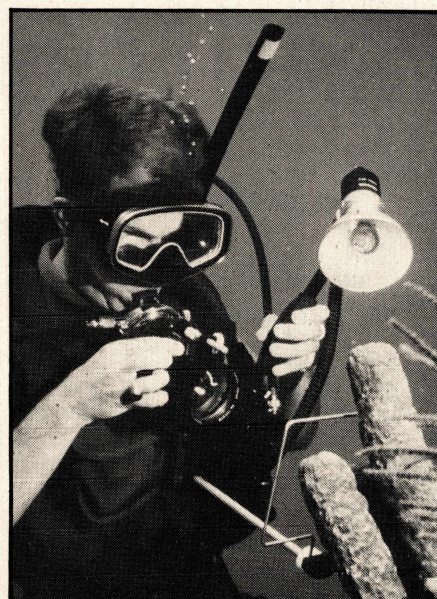
Any of the special FP flashbulbs will synchronize with focal-plane camera shutters at all of the shutter speed settings. This is important to underwater photographers who must use a high shutter speed to stop action.

three apparent feet. This gives you about double the depth of field you would normally get with ASA 50 or 64 exposures of about f5.6 or f8. And if you need more depth of field — or if your strobe fails in dim conditions — Kodak Ektachrome 400 is an excellent "emergency" film.

For color prints, we believe that it is more convenient to have prints made from our favorite color slides than to use color negative films. However, you may wish to try Kodacolor II (ASA 100), Kodacolor 400 (ASA 400), Fujicolor F-II, F-II 400, or some other popular brand of color negative film. In one test with Kodacolor 400, Kodak dutifully made both acceptable small prints, and duplicate color slides, from six negatives that we had bracketed at one-stop intervals over a six-stop range! For black and white prints, try Plus-X (ASA 125) for moderately bright conditions and Tri-X (ASA 400) for darker conditions.

BALANCE WITH SUNLIGHT

At apparent flash to subject distances of about three feet or more, sunlight may overpower the flash and determine the exposure. To estimate the correct aperture setting, compare an exposure meter reading of the subject with the aperture setting from your flash exposure table for the flash to subject distance you



a second image is exposed over it during the longer 1/60 second sunlight exposure. The double images cause your pictures to appear blurred. You will have fewer double image problems if you do your medium-distance U/W photography on overcast days, when the sunlight exposure will be minimized. Otherwise, try the following techniques:

1. Hold the camera as steady as possible when photographing stationary subjects, but pan the camera with moving subjects.
2. Use FP flashbulbs for synchronization with faster shutter speeds if you have a focal-plane shutter.
3. Use a weak strobe, which provides fill lighting without forming strong images, and use sunlight exposures.
4. Use a powerful strobe held close to the subject. The small aperture required for the strobe exposure will diminish the effect of the sunlight exposure. 

GETTING THE MOST FROM YOUR FLASH

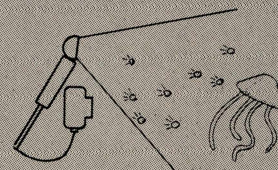
- Ni-cad powered strobes may resist accepting or holding a charge if unused for several months, or if left turned on for several days. Condition the battery by charging and discharging it three times. Discharge the battery by leaving the strobe on until a blinking ready light stops blinking and merely glows. With strobes having nonblinking ready lights, leave the strobe on for several hours, occasionally flashing the strobe until the recycle time approaches 30 seconds. When charged for the fourth time, the ni-cad battery should hold a charge provided that it hasn't been previously damaged. Note: Allow the battery to cool between charge and discharge cycles, and heed any warnings in the manual.

- With disposable batteries (low-voltage C or AA cells, or high-voltage 300 and 510 volt batteries), store the batteries in the refrigerator if they won't be used for several weeks. Alternating sets of batteries will prolong battery life during extended trips. If the strobe hasn't been used for several months, insert an old battery and turn the strobe to the on position for 30 minutes to condition the strobe's storage capacitor. Remove the old battery and insert the new battery for your photo dive.

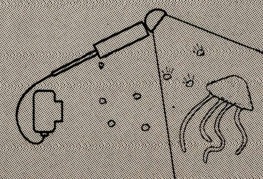
- Before storage, wash all equipment thoroughly. Remove sync cord connectors from Nikonos flash sockets, and clean and lubricate the socket and connector threads. Warning: A connector (especially those with a black finish) can freeze in a Nikonos flash socket with oxide build-up! Remove disposable batteries for refrigeration and recharge ni-cad batteries. Loosen quick-release snaps to reduce tension and pressure on plastics and O-rings. Remember to charge ni-cads monthly to keep them in condition.

- Wash unused flashbulbs if they have been exposed to saltwater. Spray flashgun sockets with WD-40 to prevent corrosion or oxides from forming, and clean bases of flashbulbs with steelwool (or other such abrasive) if necessary.

BASIC FLASH



Light reflecting off particles in the water will appear as spots in photos if flash is near camera.



Aim the flash at an angle so the backscattered light isn't reflected back toward the camera lens.

Anyone can teach you what they know, Only NAUI can teach you what you need to know.

To earn like a pro you have to learn like a pro.

The NAUI Professional Development Center is staffed with highly experienced professionals in every field. Retail Management and Sales are taught by successful speciality store merchandisers. Equipment Repair classes teach "hands-on" repair of *all* major manufacturers equipment. Resort Operation Instruction takes place on-site in the Bahamas. And Professional Instructor Training includes Independent, School and Store instructor experience.

The difference between our course and theirs is our class.

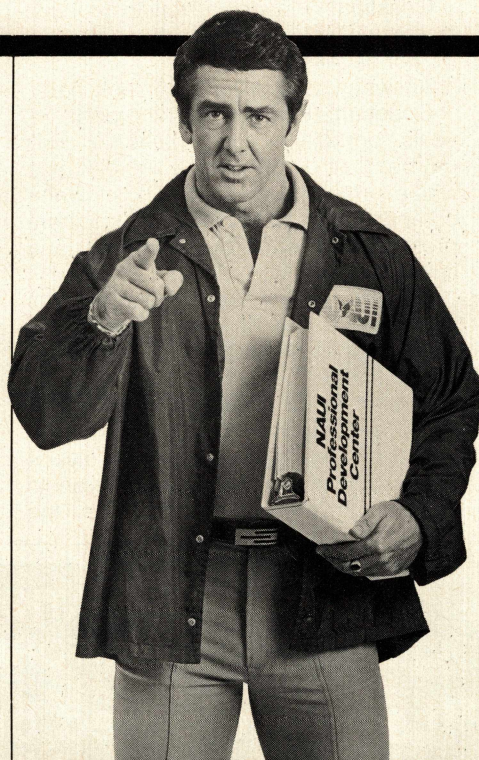
NAUI is deeply involved and stands closely behind every point of instruction. As a result standards are high, hard work is required and no time is wasted on unnecessary "filler" training. We'll train you well, and everything you learn will count toward a more rewarding career in the diving profession.

After you learn we help you earn.

The NAUI Professional Development Center doesn't just train you to be a professional, we help you find suitable industry employment. Reference and placement are free. And since NAUI members hold important positions worldwide, finding the right spot for you can be your own choice or decision.

Are you ready for the challenge?

NAUI Professional Development Center is open to all certified (includes all major certifications) divers who are interested in increasing their skills. Located in Cypress, California, the Center is ideally



NAUI PROFESSIONAL DEVELOPMENT CENTER

*Learn Today
Earn Tomorrow*

located close to major diving manufacturers and the Pacific Ocean. Find out how learning today can help you earn tomorrow. Advance your career now. Use the handy "Information Request Form" to sign up for your career in the diving profession.

COURSES

Professional Instruction

For those interested in learning all aspects of Professional Instruction. A must for Independent, School or Store Instructors.

Resort Operations

For those interested in a career as a tour guide or resort operator. On-site training in the Bahamas covers intricacies of foreign countries, exotic habitats and travel business lifestyles.

Retail Management and Sales

For those interested in dive store management or sales. Includes a complete program on successful management, operations, building sales staffs and merchandising.

Equipment Repair

For those who must know repair for a retail store, up-keep and maintenance, or rental operations. Includes "hands-on" repair of *all* major manufacturer's equipment.

NAUI leads the way

NAUI Professional Development Center

9547 Valley View, Cypress, CA 90630—Phone: (714) 761-8348

☐ I would like further information on how I can advance my career in the Diving Industry. Areas of Interest:

- | | | |
|--|---|--|
| ☐ Instructors | ☐ Store Management | ☐ Equipment Repair |
| ☐ Asst/Instructors | ☐ Retailing | ☐ Resort/Operations |
| ☐ Crossover to NAUI | ☐ Rescue | |

Name _____

Address _____

City _____ State _____ Zip _____

Telephone (Day) () _____ (PM) () _____

Medifacts

CHARLES V. BROWN, M.D.

DECOMPRESSION

The purpose of the March 10, 1979 PADI Decompression Tables Seminar was to educate participants in the correct procedures for application of U.S. Navy Dive Tables. The topics prompted many excellent questions but time did not permit the answering of each. In the interest of diver education, some of the questions are answered in this column.

PARTICIPANT QUESTIONS

Question: If a diver is bent and oxygen is available, is it best to administer it on the way to the chamber?

Answer: Absolutely! Breathing oxygen instead of air prevents nitrogen inhalation. Therefore, the nitrogen out-gassing gradient from blood to alveoli is increased. Also, through a mechanism known as the oxygen window effect, bubbles are more rapidly reabsorbed. Because of its higher partial pressure, more oxygen will diffuse through tissue fluid to areas deprived of circulation.

Question: Please comment on the use of the tables by older divers.

Answer: It is generally agreed that age increases bends risk. The degree of increase is significant through the young adult years, and zooms with middle age. Many divers in their 30's and 40's have been hit after violations they routinely undertook when younger. Divers in their 40's and 50's are occasionally hit even within the table limits. We're not sure why. The reasons usually cited are increased body fat and decreased circulatory efficiency. Whatever, if you like to dive but you've had a lot of birthdays, don't do it deeper.

Question: What do you say to a routine stop at ten feet, even when the tables say it's not necessary?

Answer: I say hurry. It can only help.

Question: How come pinnipeds — seals, porpoises, and whales — don't get bent? And how does a 100 foot blue whale on its head in 100 ft. of water compensate for the three atmosphere pressure difference between head and flukes?

Answer: The thorax in pinnipeds is highly elastic, and in deep dives the alveoli collapse, shifting air into the larger, non-absorbing airways. Thus little nitrogen reaches the blood. Even before alveoli collapse, these animals are protected by their highly developed diver's reflex. Selective vasoconstriction shuts off blood flow to most of the body, and the

pulse becomes very slow, moving through the lungs only enough blood to supply the heart and brain. The reflex ceases upon surfacing. Blood from the heart and brain mix with the venous return from the rest of the body, and the net nitrogen excess is too low to cause significant bubbling.

The vertical whale doesn't have to worry about the different pressures acting on his tail, midriff, and head. Compensation is automatic. Since his body density is close to that of sea water, the hydrostatic pressure within his body will balance any outside pressure.

Question: Is inner ear ringing an indication of decompression violation?

Answer: A sensation of ringing in the ear (the fancy name is tinnitus) indicates that something has happened to the inner ear. In a diver, that something is usually squeeze, rupture of a round or oval window, or decompression sickness. Think of the ringing as an alarm buzzer — it means get to an ear doc promptly!

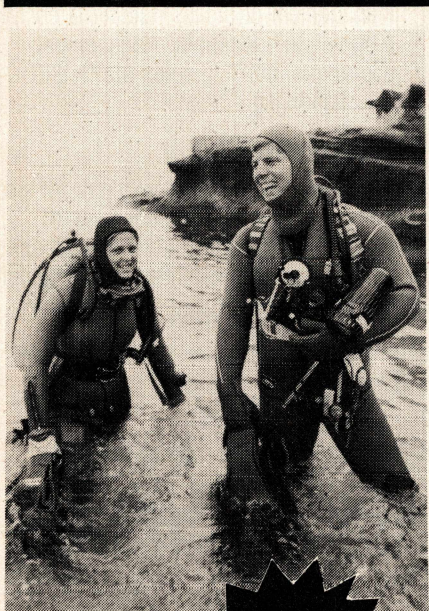
Question: What is the final outcome of decompression sickness if not treated.

Answer: Anything from complete healing to death. Except in the rare fatal case, the bubbles go away, but the damage they do may not. Limb bends seem to heal completely, but the area hit seems more susceptible to future hits. The lungs have great reparative power, and chokes

(Continued on Page 65)

Men and Women!

BOREDOM RESOLVED!



Chartered
by
PADI

PADI INTERNATIONAL COLLEGE IN CALIFORNIA, INC.

If you are bored or at a dead end
with your present job . . . We want to
talk with you!

• Master instructor preparatory
("Gold" open water instructor)

• Open water instructor one and
two weeks. All specialty diving
certifications

• Instructors and Advanced Divers
Earn your Wreck and Deep
Diving Specialty Certifications
in Lake Superior in 4 exciting
days in August

• Instructor and Diver Certification
in a six day U/W Photography
Specialty Course at Lake
Superior in August

• Write or call for details

Earn Your Diving "PHD"
Call or Write Today

For Complete Details On Any Of 020
The Programs, Write Or Telephone:

COMMANDER JIM WILLIAMS, U.S.N. (Ret.)
PRESIDENT, PADI INTERNATIONAL
COLLEGE IN CALIFORNIA, INC.
1310 ROSECRANS (POINT LOMA)
SAN DIEGO, CALIFORNIA 92106
TELEPHONE: (714) 223-9821

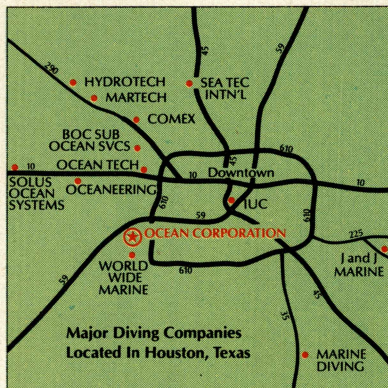
NAME _____ AGE _____
ADDRESS _____
CITY _____ ST _____ ZIP _____
PHONE _____

Send me info on: ☐ 10 Week Gold Inst.
☐ 1 or 2 Week Inst. ☐ Master Scuba
Diver ☐ Sales Promotion For Dive Shop
☐ Inst. or Diver Specialty Certifications
☐ U/W Photo/Deep/Wreck Diving
Specialties in Lake Superior

Why Houston?

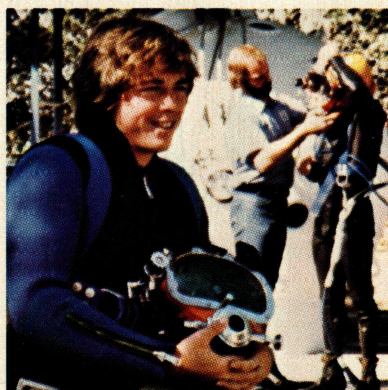
BECAUSE

The Ocean Corporation is located in Houston and more commercial divers are hired in Houston than in any other place in the world. Twelve diving companies are located in Houston including three of the four largest in the U.S. Many others are located in the nearby New Orleans area. The demand for divers is so great in Houston that large locally based diving companies like Ocean Systems, Hydrotech Systems, Martech International and Sea Tech International have hired many of our students for part-time work while they were attending school. Over 90% of our recent graduates went to work for these and other local diving companies when they completed our program. Houston is the place where the action is...the commercial diving, offshore construction and oil industry capital of the world.



BECAUSE

The Ocean Corporation is a commercial diving company, not just a school. Our facilities, equipment and training aids are the best, and our diving systems are as up-to-date as possible...



because much of the equipment is used by our diving operations division to perform actual diving contracts in the field. Ocean Corporation has successfully completed many underwater jobs for various industrial clients over the years... including specialized underwater inspections, maintenance and repair work. For example, we did the world's first commercial underwater repair job in a nuclear power plant. And most of our divers have been graduates of our own school.

BECAUSE

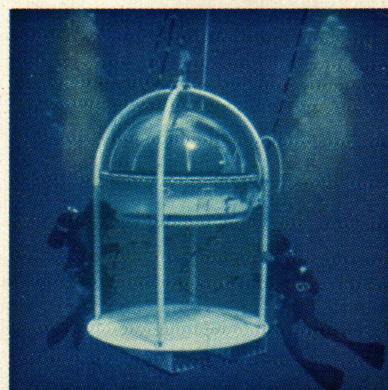
The Ocean Corporation is a convenient and exciting place to go to school. Houston is one of the fastest-growing and most dynamic cities anywhere. It is a city of expansion, energy and youth (the average resident's age is in the mid-20's). Houston offers every conceivable kind of entertainment, from sports events, ultra-modern discos and open-air theater to rough-house local rodeos, chili cook-offs and the new Texas-size



country-western dance clubs. Reasonably priced adult and singles apartments are readily available within walking distance of the school, and fast-food to luxury restaurants are nearby. The semi-tropical climate is wonderful, the sport diving is great and the folks are friendly.

BECAUSE

The Ocean Corporation management and instructor staff have long-term experience in the international offshore oilfield diving business. Retired ex-military divers and sport scuba divers don't run the school...commercial divers do. For example, the President of The Ocean Corporation, Larry



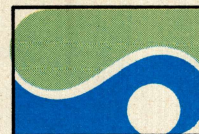
Cushman, was Vice President and Europe/Africa Area Manager for Ocean Systems, Inc. for three years...with responsibility for all North Sea diving and underwater construction operations. He also worked six years as a manager for Oceaneering International, Inc., another of the world's largest commercial diving contractors. Ocean Corporation managers and instructors know today's diving business...first-hand, from recent experience.



The Ocean Corporation

5709 Glenmont • Houston, Texas 77081

If you are interested in becoming a commercial diver, please write and ask for our free information package on job opportunities, our school and our super city. If you'd rather call, make it collect and ask for Fred Tourtel (713) 661-0033.



School of
Commercial and
Industrial Diving

NAME _____ AGE _____

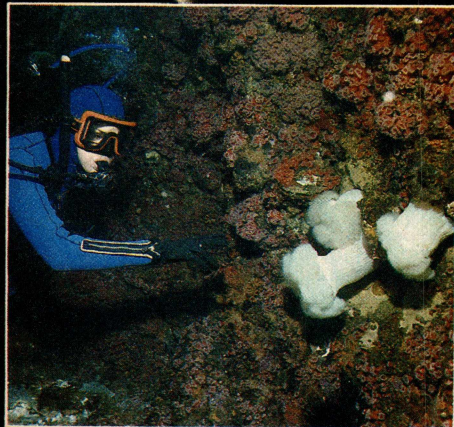
ADDRESS _____ ZIP _____

()

PHONE _____



An U/W mountain rising from over 400 feet, Begg teems with fish and invertebrates.
Metridiums extend slender necks toward diver. Cowry among the anemones.



Eric Hanauer



Mike Storm

BEGG ROCK

While many divers will tell you that Begg Rock is the most spectacular dive in Southern California waters, others will tell you the place doesn't exist. Located eight miles off the west end of San Nicholas Island, about 75 miles off the coast, the rock is at the mercy of outer channel weather conditions. Only about one of every four attempts to reach it by charter boat is successful. Many divers have staggered out of their bunks at 6 am only to find themselves on the lee side of Santa Barbara Island, an alternate destination for those blown off San Nick.

The rock isn't very impressive when seen from the surface. Standing 15 feet above sea level and covered with bird droppings, it gives little indication of the beauty lying below. Usually it stands alone against an endless horizon of ocean, although sometimes the faint outline of San Nicholas Island can be seen in the distance. Little or no protection is afforded from swells or currents. This, coupled with the fact that the best scenery is found near 100 feet, puts Begg Rock in the advanced diver category.

Underwater, Begg Rock is alive. In the shallow water *Corynactis* lend their bright red coloration to the background. These aggregate anemones like cold water, and can cover the side of a wall like a plush red carpet. Each individual is about the size of a fingernail.

At about 40 feet the *Corynactis* give way to millions of small white anemones, about three to five inches across. From a distance they give the sheer walls of Begg Rock the look of a giant white shag carpet. A closer look will reveal chestnut

cowries among the anemones. Rock scallops, revealed by their orange lips, can be found in the crevices.

As the diver nears the 100 foot mark the *Metridiums* begin to appear. *Metridiums* are the royalty of California anemones, common in the colder waters of the north but found in few areas of Southern California. At Begg Rock they grow to over a foot tall. The slender white stalk supports a head of tentacles numbering in the thousands. *Metridiums* are extremely sensitive to light and water movement and will sometimes extend their slender necks toward swimming divers.

Begg is not a spot for big gamefish. Rockfish are the predominant genus. The reddish vermillion rockfish, sometimes called the Pacific red snapper, is abundant. So is the olive rockfish, or johnny bass. Many large female sheephead are present. This is unusual because the sheephead begins its life cycle as a female, then undergoes a sex change. Most large sheephead are males, except at Begg Rock.

Roy Hauser, skipper of the *Truth*, was one of the first to dive Begg Rock. He knows the area better than anyone else and is responsible for the chart which accompanies this article.

In 1965, Roy was a 20 year old deckhand on the *New Longfin* out of San Pedro, skippered by 76 year old Ted Nelson. They had made three dives on San Nick, reached their lobster limit, and were looking for a fourth dive. Another boat, the *We Seven*, had dived Begg Rock but came back reporting it was no good for game. Game was a top priority item for divers in 1965. Roy wanted to

find out for himself and persuaded Nelson to give it a try. There was no safe place to anchor, so he and Masa Watanabe, a local instructor, dropped on one of the boilers for a short, shallow dive. They picked up some rock scallops but couldn't have been too impressed because it was two years before Hauser returned.

By this time, Roy had his skipper's license and was running the *Rio Rita* out of San Pedro. On the 1967 dive they metered the area on the fathometer and went deep enough to see the *Metridiums*. Roy recalls, "I had never seen as much marine life per square foot." He felt that Begg Rock added a special dimension to California diving and began running regular trips to it in 1970 when he bought his own boat, the original *Truth*. The area became famous when it was featured in Bill MacDonald's film, *Innerspace Vibrations*.

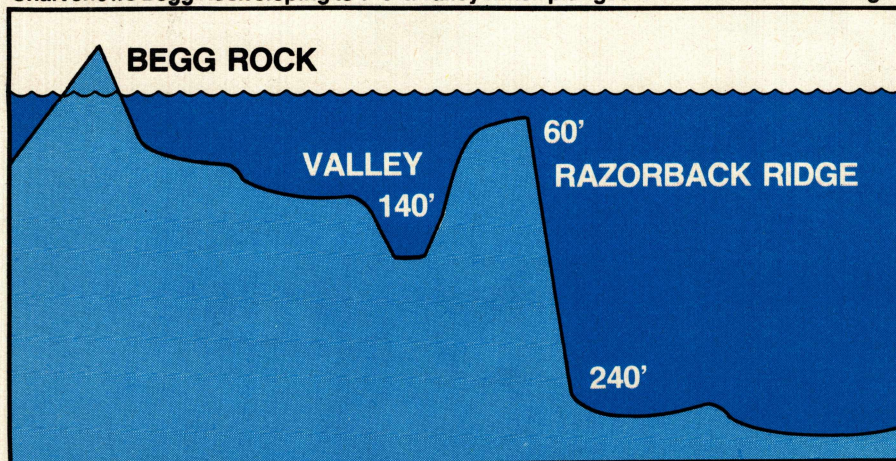
Today, several dive boats schedule trips to Begg Rock from San Pedro. Despite the odds against making the destination, the boats are usually filled with sight-seers and underwater photographers. If weather and ocean conditions prohibit the 75 mile run to Begg Rock, the boat might wind up at San Nicholas Island, Santa Barbara Island, or perhaps even Catalina. In most cases, the difference in fare between Begg Rock and the final destination is refunded. Information on trips is available at most Southern California dive shops.

A handful of divers have hit the bottom of Begg Rock, the legendary Razorback Ridge. Razorback lies on the mainland side of Begg Rock. The backside of the ridge is dome shaped, about 150 feet wide, and comes within 60 feet of the surface. From there it drops off abruptly to 240 feet. The flat, barren rock wall drops straight down into white sand.

What makes Begg Rock a special place? First, the distance from the mainland and unpredictable weather conditions make it a spot seldom visited by divers. It is located in the transition zone between the southern Channel Islands and the colder waters of the northern chain, thus offering the best of both worlds. Lingcod swim with calico bass, garibaldi with vermillion rockfish, red hydrocorals appear with *Metridiums*.

An underwater mountain rising from over 400 feet of water, Begg Rock is alive with fish and invertebrates delightful to the eye and marvelous to photograph.

Chart shows Begg Rock sloping to 140 ft. valley which plunges to 240 ft. Razorback Ridge.



Southern California's Sentinel In The Sea

By Eric Hanauer

A PROFESSION IN DIVING?

We have a future for you as a professional scuba instructor!

Our Instructor College was the first college of its kind in the entire world.

Many graduates from our Instructor College now own retail diving businesses.

Others are managing diving resorts or are employed as full-time professional scuba instructors.

The law says that we cannot guarantee a job to anyone. However, we can send you letters from diving retail stores seeking full-time instructors trained by our college. We can give you the names and phone numbers of graduates from our college who work in NASDS store/schools across the U.S. and Canada. If you're interested in our college, contact us... we'll tell you more.

Our vocational Instructor College is considered to have the highest standards in the industry. It is supported by over 300 retail store/schools throughout the world.

We don't run "short" programs. We do not cross-certify with other agencies.

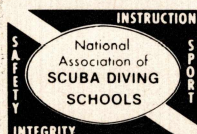
You will earn the instructor rating you receive in our intensive 10 week program in San Diego, California. We certify true professionals from our Instructor College.

The cost for attending the NASDS Instructor College is \$1,695.00 plus books.

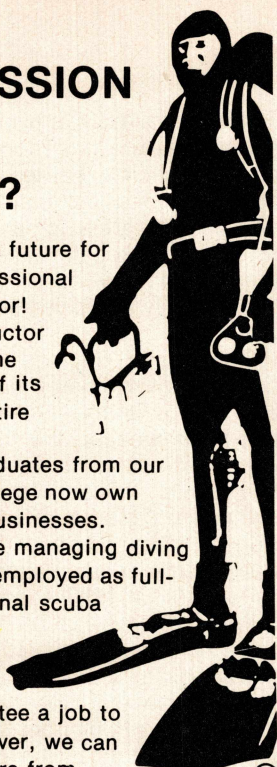
Please include your phone number and area code on any correspondence.

If you seek further information, write:

**NASDS EDUCATIONAL DIVISION
SAN DIEGO DIVERS SUPPLY
DIVING INSTRUCTOR COLLEGE
4004 SPORTS ARENA BLVD.
SAN DIEGO, CA 92110**



**State approved for V.A.
Students Voc. Rehabilitation
State and V.A.**



Diving the Montana

Text and Photography by Jim Chester

Montana! February! Tropical fish! Snowshoes, skis, and toboggan! Scuba diving! The answers to some enigmatic crossword? Nope! The elements of a most unusual dive experience in the frigid mountains of Montana.

For Montana scuba divers the winter is long and cold. Except for a rare foray into the ocean or a chilling dip under the ice, diving comes to a screeching halt with the first snow. Nevertheless, SKIN DIVER continues to show up regularly, filled with tantalizing pictures of bikini clad gals, tropical fish, reefs, sunny

skies, bikini clad gals... About four months into the winter, it finally gets to you. Something tells your soul it's going to dry up if you have to spend one more day staring wistfully out the window at the falling snow.

Solution: a little jaunt to Montana's Trudau Lake. Only 75 feet in diameter and 17 feet deep, but a magic place. A warm spring feeds a stream that cascades down travertine slopes into the lake. The spring temperature of 72°F drops to 63°F at the lake. Chilly by some standards, but 30°F warmer than most



Tropics

winter water in Montana.

A surprise awaits hidden beneath the glass smooth waters. A quick glance under the surface reveals glinting gold against a background of green. A double-take and the gold coalesces into forms, hundreds of them. Fish! Tropical fish! Swordtails! Mollies! In Montana? On a sagebrush and snow-covered mountainside? Naw, must be a dream.

Fifty pound backpacks, snowshoes or skis strapped to protesting feet and straining muscles tugging against a toboggan filled to overflowing with scuba



gear is too weird, even for a dream. It's real and on February 11th, with the owner's blessing (sympathy?), we hoofed it the three miles to Trudau Lake. Dive fever and cabin fever are powerful medicine!!

Montana skies smiled upon the six of us, Don and Charlie Wirtz; Jim, Mary Alice and ten year old Mike Chester; and Tom Adams; as we set off on the adventure. Five divers lugging three sets of scuba gear while skiing through the sagebrush made a strange picture indeed. A lot of huffing and puffing, a few tumbles, and a couple of hours later we were there. The area's thermal activity even presented us with a patch of bare ground sporting a few sprigs of green grass. Beats standing in a snowdrift while putting on your booties.

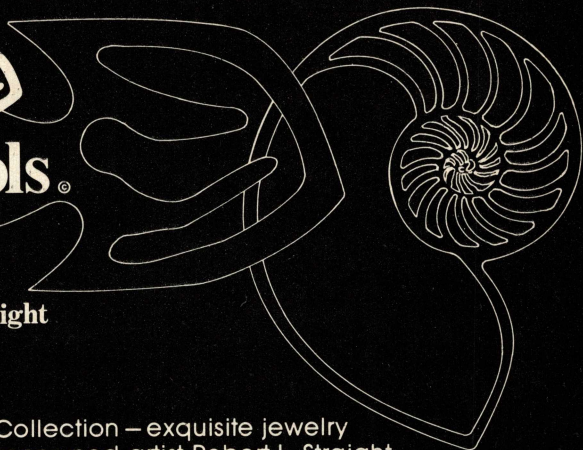
The magic of a piece of the tropics in the Montana mountains worked its spell on us and an afternoon of lazing in the balmy water, marveling at the incredible fish, passed too quickly. As we packed up, we knew it had been a special day. A full moon to guide us confirmed it. >

Sea Symbols

by Robert L. Straight

The Sea Symbols Collection — exquisite jewelry and sculpture by renowned artist Robert L. Straight

ALL NEW 1980 CATALOG \$2.00,
or \$1.00 plus present catalog cover:
8439 Barkley Dr., Houston, TX 77017
(713) 643-4051



**NEW
METHOD!**
Only \$45.00

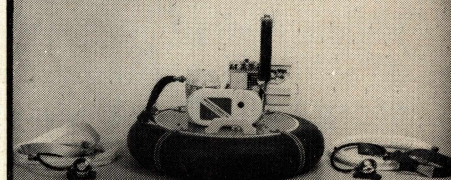


20/20 vision underwater with prescription faceplate lenses. The method of bonding lenses to the mask is the only one which corrects exactly as your glasses do.

Individually analyzed by an optometrist experienced in the problems of under water vision. Lenses as large as any manufactured. Used by U.S. Navy underwater training facilities as well as State agencies. To order send copy of prescription, distance between eyes, and mask or plate only. Prescription swim goggles also available. Bitocals, \$14.00 extra. Air mail \$1.50 extra. WE CAN OBTAIN COMPLETE INFORMATION FROM YOUR GLASSES. SEND FOR FREE LITERATURE. UNCONDITIONALLY GUARANTEED.

DRS. NEWTON & O'BRIEN

575 - 6th St., San Pedro, CA 90731 (213) 832-1185

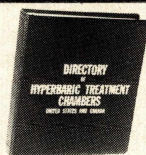


**HOOKEAH DIVERS
DIVE WITH
BROWNIE'S THIRD LUNG**

Price \$450.00 — Including 2 regulators, 2 hoses and 2 harnesses. Five other models available. For brochures send self-addressed stamped envelope to:

UNDERWATER SYSTEMS, INC.

1961 N.E. 31st COURT
LIGHTHOUSE POINT, FLORIDA 33064
(305) 942-3205



THIS BOOK COULD SAVE YOUR LIFE!

Sport diving should always be conducted within no decompression limits, however, fatal air embolism and decompression sickness is always a tragic possibility.

The length of time between symptoms and treatment can be critical and often fatal.

This "Directory of Hyperbaric Treatment Chambers," prepared by professionals in the diving field, lists the names, address and phone numbers of contacts in the United States and Canada. Compiled state by state to give you quick access to medical treatment in case of a diving accident.

MAIL TODAY

Please send me _____ book(s) at \$14.95 ea. (In Louisiana add \$.75 tax.)

☐ Check or Money Order
☐ Visa ☐ Master Charge

Card No. _____

Exp. Date _____

Signature _____

4 TO 6 WEEKS DELIVERY

PLEASE PRINT

Name _____

Address _____

City _____

State _____ Zip _____

BRYANT & MOORE ENT., LTD.

P.O. BOX 539

HARVEY, LOUISIANA 70058



**We're six years old
...and getting better**

**at Sub-Aqua
Specialties**

It's our birthday here at Sub-Aqua Specialties. Six years ago we began as another small retail store in Valdosta, Georgia, and frankly, no one really expected us to grow as we have. But we believed that we had the key to success...we offered the very best merchandise that we could find at the lowest prices possible...we placed a high priority on service (you can call us toll-free from anywhere in the fifty United States, Puerto Rico, and the Virgin Islands, we offer same-day shipping on most stock items, and we pay ALL shipping charges within the continental United States on any order of \$25.00 or more)...and we never forgot that without your trust and patronage we couldn't make it. Now, six years and thousands of patrons later, Sub-Aqua Specialties is one of the largest suppliers of Scuba equipment and accessories anywhere in America. Thank you for six good years.

A NEW LOOK — A NEW SOUND — AN OLD PROMISE

Now, you probably noticed that we have a slightly different look, and when you call you will hear "Buescher Enterprises, which division, please?" These changes reflect the expansion your continued patronage has led to...we have expanded operations at our parent company in order to offer you even better service in the future. Now all calls to Sub-Aqua Specialties will go through Buescher Enterprises, Inc. where we have more telephone lines (so that you won't have to wait) and where our computer facilities will help us provide faster, more accurate service. But you'll find you're talking to the same friendly people. As we enter the 80's, one thing you can count on from us at Sub-Aqua Specialties is that we will continue to offer you the best of it all — the best in merchandise, the best in prices, and the best in service.



**Sub Aqua
Specialties**

A Division of Buescher Enterprises, Inc.

1-800-342-7156

In Georgia

1-800-841-4443

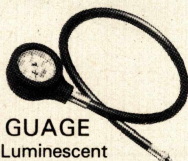
In the Continental United States

And to celebrate . . .

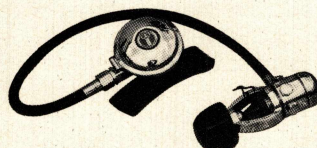
. . . We're offering you our "6 years old and getting better" bargains which include:



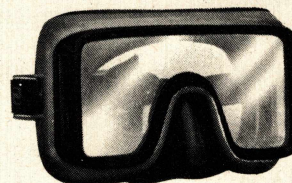
**80 CUBIC FOOT
ALUMINUM TANK**
100% Rust Free — includes
Low Profile K Valve . **\$99.95**



**FARALLON
PRESSURE GAUGE**
4,000 P.S.I., Luminescent
face with easy-to-read
numbers **\$34.95**



**U.S. DIVERS
CONSHELF SUPREME
REGULATOR**
Finest Balanced Diaphragm
Regulator available. Complete-
ly sealed first stage. Limited
lifetime warranty **\$109.95**



**FARALLON
PRISMATIC MASK**
Light weight with wrap-around
vision **\$24.95**



**U.S. DIVERS
MARINER BACKPACK**
Adjustable, fits all standard Scuba
cylinders. Quick release shoulder
entry **\$24.95**



**U.S. DIVERS
ROCKET or MINI-
ROCKET FINS**
Extra wide vents for extra
thrust. Fits all adult sizes. **\$16.95**

**These six items are priced at Red Hot Rates, as a
"thank you" for six good years. THESE PRICES
ARE ONLY GOOD THROUGH APRIL 15, 1980.**

Call us TOLL FREE at the numbers listed below or mail in this coupon.

Sub-Aqua Specialties

206 EAST HILL AVE./VALDOSTA, GEORGIA 31601

Name

Address

City State Zip

Sub-Aqua pays shipping charges within Continental United States
(orders less than \$25.00 subject to \$2.50 service fee.)

- ☐ 80 Cu. Ft. Aluminum Tank
- ☐ U.S.D. Conshelf Supreme Regulator
- ☐ U.S. Divers Rocket Fins
- ☐ U.S. Divers Mini-Rocket Fins
- ☐ Farallon Pressure Gauge
- ☐ U.S. Divers Mariner Backpack
- ☐ Farallon Prismatic Mask

TOTAL FOR ITEMS

GA. RES. 4% SALES TAX

TOTAL

☐ Money Order ☐ Master Charge ☐ VISA
☐ Check ☐ American Express

Card #

Expiration Date

Instructors . . . Be sure to ask about our special "Instructor Program"

Underwater life support systems are potentially dangerous to a non-trained user. Phone or mail order purchases of Scuba Tanks, Regulators, or Buoyancy Compensators must include instructor's name and number or a copy of your certificate. This ad does not constitute an offer to sell these items via mail order.

**SUB-AQUA SPECIALTIES IS A P.A.D.I. 5 STAR
TRAINING FACILITY**

1-800-841-5000

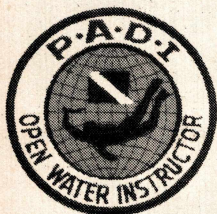
In Alaska, Hawaii, Puerto Rico, Virgin Islands

Call us to ask about any item you need — Your
call will be answered by divers who know diving
and diving equipment. We'll also send you a
copy of our free catalog and price list.

Instructor Training Courses

PADI ITC SCHEDULE

Seattle, WA	Mar-May (Wknds)
Dominican Republic	March 22-29
Guam	March 29-April 5
Sydney, Australia	April Weekends
Chicago, IL	Apr/May (Wknds)
Columbia, SC	April 20-27
Philippine Islands	April
Taiwan	April/May
Frankfort Germany	May 4-11
Venezuela	May 11-18
San Marcos, TX	May 17-24
Thailand	May
Puerto Rico	May 31-June 7
St. Louis, MO	June Weekends
Selinsgrove, PA	June Weekends
Vancouver, B.C.	August 2-9
Albuquerque, NM	July 5-12
S. Caicos, W.I.	July 6-13
Hopeville, GA	July 14-21



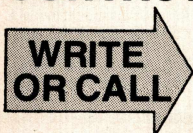
JOIN THE
PROFESSIONALS

PADI Instructor Training Courses are also offered monthly at sanctioned Instructor Training Facilities in California, Florida, and Vancouver, Canada. Brochures available upon request.

SEND FOR:

- ☐ Self grading Instructor Exam - \$2.00
- ☐ ITC Info Package - FREE

CONTACT:



PADI ITC
2064 N. Bush Street
Santa Ana, CA 92706
(714) 547-6996

PADI NUMBER ONE IN
DIVER EDUCATION

Scubapro Proflex Wetsuit

Comfort
and good looks

By Bonnie J. Cardone

Bend, stretch, sit. I was amazed. I had just put on my new Scubapro Proflex wetsuit and was pleasantly surprised to find myself mobile. The suit is extremely comfortable and flexible. When I bend, it bends, without chaffing or pinching.

My old wetsuit, though still in one piece, had gotten incredibly stiff after years of sun and sea. Once I put it on, I could not sit down comfortably. In between dives I took to standing, with my arms slightly apart at my sides.

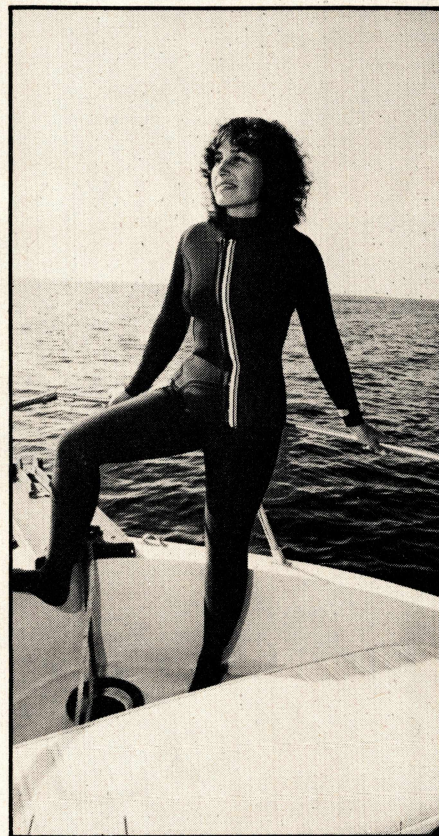
It has occurred to me that I might need a new wetsuit. But, divers hate to replace dive equipment and I am no exception. After all, a few rips and tears in a wetsuit are not life-threatening. Besides, Band-aids applied to the backs of my knees and the insides of my elbows prevented the wetsuit from rubbing them raw. Anyway, wetsuits are expensive. These of course, were some of my major arguments. I only had to look around on dive boats to find others. (My dive buddy's hairy knees are visible through his wetsuit, yet he is just beginning to think about getting a new one.)

I might still be wearing my old wetsuit, but, someone took pity on me. That's how I ended up with a new Scubapro Proflex wetsuit. What a difference!

Proflex is a blend of Dupont Lycra and Spandex bonded to Rubatex neoprene. The Proflex makes the suit tough, durable and flexible; the neoprene makes it warm. Wetsuits made of Proflex slip on easily, leaving fingernails and tempers intact. (You don't have to rest afterward either.) These suits stretch and bend with the wearer. There is no feeling of confinement when you've got the suit on: There is freedom of movement.

The Proflex suit comes in three pieces: farmer johns/janes, jacket and hood. Booties and gloves in matching Proflex are also available. The farmer janes have an offset, heavy-duty nylon zipper and Proflex lined legs. Velcro tabs on the shoulder straps allow you to adjust them for a perfect fit. The men's farmer johns have all the same features but are minus the zipper.

The jacket of the Proflex suit has raglan, set-in sleeves which are most comfortable. The heavy-duty nylon zipper is offset and cannot corrode. Velcro fas-



photograph by Eric Hanauer

teners allow you to adjust the neck opening as tight or as loose as you desire. Proflex lines the sleeves of the jacket. The inside of the farmer john/jane top and the inside of the jacket body are smooth neoprene for warmth. The beavertail of the jacket closes with velcro — there are no fittings to corrode or break.

Proflex has a lot to do with the suit's flexibility, but it is also extremely well designed. Much attention has been paid to details. The suit is contoured to the body. The arms and legs curve. Hanging up, my suit looks as if there's an invisible me in it. Even off, it has form.

The suit is also well made. All seams are glued and sewn. The workmanship is evident at a glance.

The Scubapro Proflex wetsuit comes in Scubapro blue and black, in all sizes from extra small to extra large. It is available in one-quarter inch (for coldwater diving) or 3/16 inch (for warmer waters) thicknesses. It can be custom made if you desire.

Don't wait until your wetsuit looks like black neoprene lace or is uncomfortably stiff to shop for a new one. See your local Scubapro dealer.

DIVE WITH NIKONOS

YOU'LL COME UP WITH TREASURES EVERY TIME. The treasures you gather with the Nikonos III are sharp, colorfully lifelike Nikon quality photographs that you'll enjoy and show with pride, again and again.

What's more, the Nikonos III makes it easy. There's no bulky housing to encumber you and interfere with your feel of the camera. Waterproof and pressure-proof to depths of 160 feet, this precision "35" from Nikon needs no housing. Just grab it and dive in.

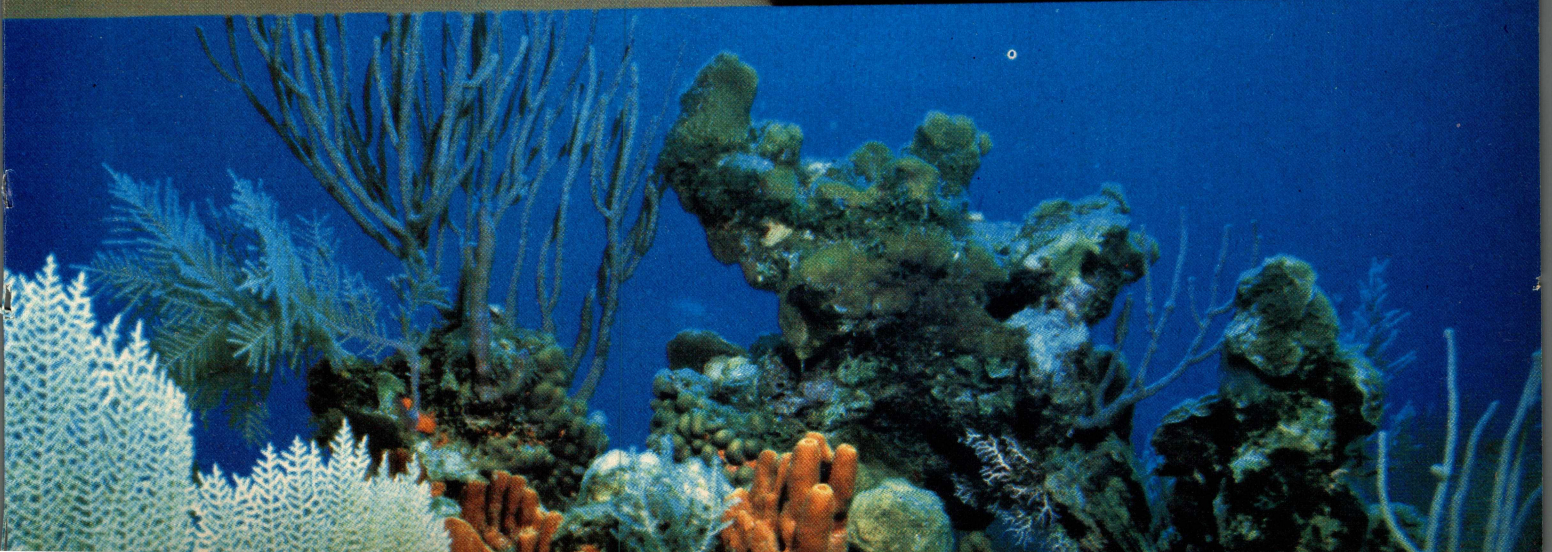
This matchless convenience, combined with its magnificent image quality and quick handling ease, makes the rugged Nikonos III the standard for underwater 35mm photography. And, it's just as great out of water. You can take excellent shots with it while boating or skiing...on the beach, in rain or snow...where you wouldn't dare use any other fine camera.

To make your photographic treasure hunting even more enjoyable, there's an impressive system of Nikonos accessories. Four special interchangeable Nikkor lenses — the finest made. Underwater exposure meter and flash. Close-up equipment, action viewfinder, and more.

And, here's more good news: the Nikonos III is now more affordable than ever. Get full details at your Nikon camera dealer or at selected dive shops. Or write to Nikon Inc., Dept. N-24, Garden City, New York 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc. 

NIKONOS III From Nikon

Nikon: Official 35mm Camera. 1980 Summer Olympic Games



New for 1980 is the Mini-Jac®, a scaled down version of the popular Sportsways Sub-Jac®

The Mini-Jac® offers the same anti-sway back-pack assembly as the Sub-Jac®, and the same double bag construction with a new reflective surface Armornyl® nylon outer bag that looks as smooth as it feels. It has the quick and easy parachute type crotch harness, too.

There is approximately 45 pounds of buoyancy from the 26 gram CO2 cartridge. It can be inflated orally or with power inflator. The Mini-Jac® also has a simple dump valve for quick deflation.

A Velcro closure pocket and hose holders, plus a strong D-ring for attaching extra equipment, keep it neat.

If you appreciate a smaller B.C., the Mini-Jac from Sportsways will serve you right.

Try one today at your nearest Sportsways dealer.

mini-jac®



Enclosed is my \$2 for the 1980 Sportsways Catalog

Name _____

Address _____

City _____

State _____ Zip _____

P.O. Box 2407 • Huntington Park • California 90255

(213) 587-4173

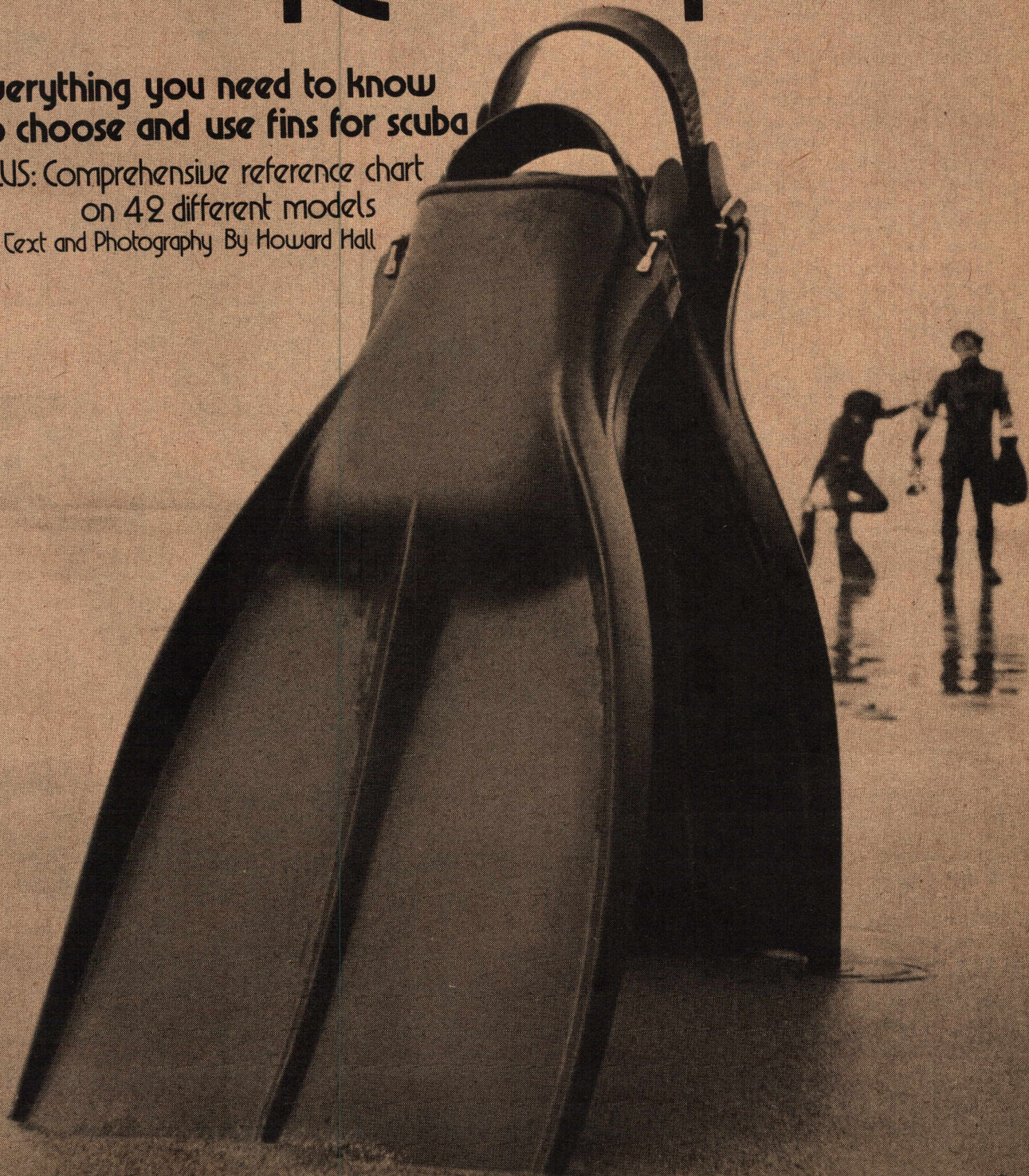
*Dupont product

PRO DIVE **FIN** Roundup

Everything you need to know
to choose and use fins for scuba

PLUS: Comprehensive reference chart
on 42 different models

Text and Photography By Howard Hall



FIN Roundup

Fins are one of the fundamental pieces of dive equipment. They are used not only by scuba divers, but by free divers, body surfers, and swimmers. And the diversity of sizes and design in fins is astounding. The differences in blade length alone are incredible. You can buy fins recommended for scuba divers which are as short as 16 inches, or as long as two and one-half feet! All of these designs are meant to do two things for the diver: provide maximum power with minimum effort. But choosing the best possible fin for your particular body may be nearly impossible without testing nearly every fin on the market. However, it might be helpful to understand how a fin works and what to expect from a good one, before you start trying them on.

HOW FINS WORK

You would think that this would be an easy thing to explain, but it's not. The engineers who design fins cannot agree as to how fins develop thrust. If they all did agree, fins would look alike.

There are two movements of the leg and fin that produce thrust. For most people, the primary thrust-producing movement is the down kick. When the leg kicks down, the fin bends creating a curved surface against the water. Force is then directed at right angles to points along this curve. This means that, with the down kick, water is being forced down and behind you, which then forces you up and forward. The other thrust-producing movement is the up kick, which causes the fin to bend the other way and for similar forces to be developed.

This seems simple, except that no two people kick exactly the same. Depending upon the bend of a diver's knee and ankle, the blade of a fin will be presented to the water in a variety of forms. Although most people rely heavily upon their down kick for thrust, the quality of up kicks vary from strong to non-existent. Therefore, if one fin works for one diver well, it might still prove unsatisfactory for another of similar size and strength.

Fin efficiency is strongly correlated to the quality of curvature developed during



AMF Swimaster, Duck Feet UDT



AMF Swimaster, Mark IX



AMF Swimaster, Mark X



AMF Swimaster, Mark X Mini

a stroke. If the blade of the fin doubles over just below the foot pocket, leaving the lower portion of the blade straight, then a great amount of efficiency will be lost. If, on the other hand, the blade remains mostly straight during a stroke, water will spill off the sides of the fin and it will be difficult to direct the forces created behind the diver. However, the curvature of the blade is not only dependent on the design of the fin, leg strength is also a major factor. A fin that produces a good and efficient curve during a comfortable endurance kick may double over during high exertion. Conversely, a fin that remains straight during an endurance kick, causing you difficulty in keeping up with your buddy, may perform extremely well when you apply maximum exertion. Since each person's leg strength and stroke is different, the quality of blade curvature will vary for a given fin. The only way to determine which fin will be best for you is to try on those available. But when you do, it is very important that you do so under the conditions in which you intend to use the fin. If an endurance kick is most important to you, then the fin should be evaluated on that basis, not by seeing which pair of fins allow you to swim fastest.

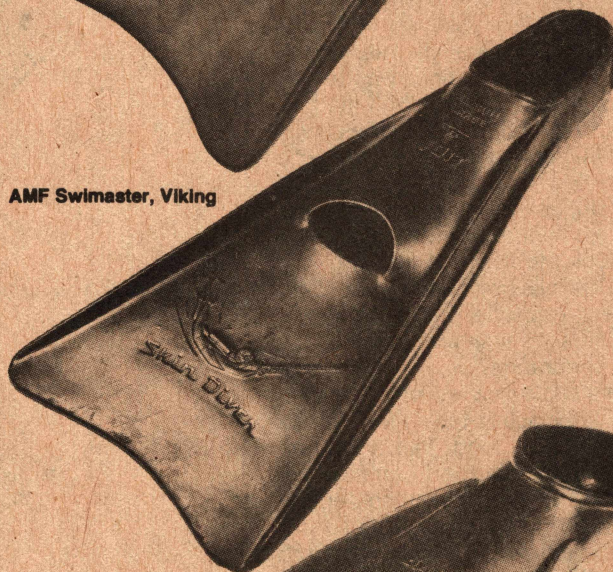
The differences in body size are also highly significant. The optimum size and stiffness of a fin will greatly depend upon the ratios of blade size and stiffness to body size and leg strength. If a person is too large for a fin, then the blade will bend too much and that, coupled with lack of necessary blade surface area, will cause insufficient thrust. If a person is too small, the optimum blade curvature will not be achieved, and energy which should be creating thrust will be wasted.

HOW FINS ARE USED

Fins are used for a number of different tasks. When choosing a pair you will have to decide which of these tasks is most important to you. Fins are used for swimming with great speed, for swimming with great power and for swimming with endurance. No one fin does all of these things best. In fact, there are fins designed to be tops in each of these tasks.



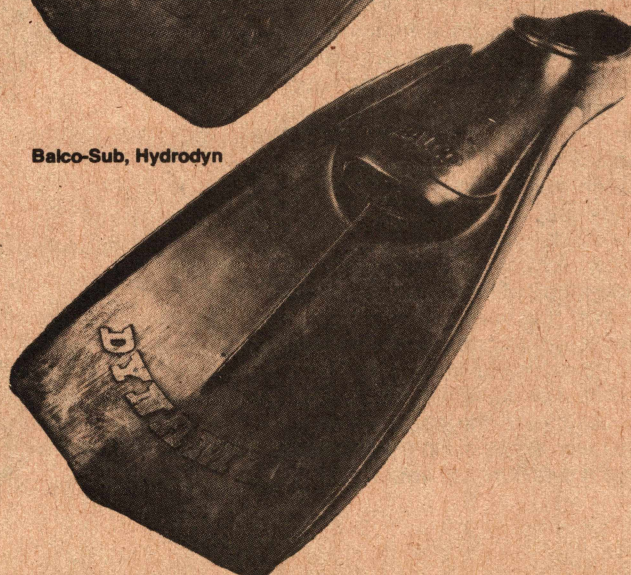
AMF Swimaster, Viking



AMF Swimaster, Skin Diver



Balco-Sub, Hydrodyn



Balco-Sub, Dynamic

FIN Roundup

Some years ago, I compared two popular fins — the standard sized Scubapro Jet Fin and the super extra large Jet Fin. I completed two tests using these fins on two separate days. One test was to swim a timed mile, and the other was to see how much weight I could lift off the bottom by kicking. With the larger fins I was able to lift 60 pounds off the bottom while the smaller fins allowed me to lift only 35 pounds. But, although the larger fins gave me considerably more power for lifting, it took me five minutes longer to complete the mile swim and my legs and ankles were sore afterwards. Ask yourself which is most important to you, power or endurance?

There are some new fins on the market designed specifically for speed. These fins are extremely long, thin and light. The design originated in Europe where speed racing with fins has been popular for some time. Now some of these designs are being sold here. Although these fins allow racers to move at surprising speed and are favored by some free divers, they may not be especially good for power or endurance with scuba.

PROPER FIT

There are three aspects of fit that are of major importance when choosing a fin. One of these is the size of the blade, another is the stiffness of the blade, and the last is the size of the foot pocket. There are two general foot pocket designs, the open heel and the shoe. Shoe fin pockets are designed to be worn without the use of booties, while open heel fins are usually worn with booties. If you are considering the open heel design, it is important to choose the type of bootie you will wear before selecting the fin. Once you have settled upon the bootie, try on various sizes of fins over it. Many open heel designs are made with adjustable straps which allow the fins to be comfortable with a wide range of foot sizes. Once the fin is on over the bootie, it should feel comfortable; your toes should not be pressed against the end; and there should be little or no side-to-side movement of your foot in the pocket. The fin should feel like an extension of your foot.

Strap tightness plays an important role



Cressi-Sub, Anatomic



Cressi-Sub, Rondine



Cressi-Sub, Comando USA



Cressi-Sub, Rondine-L

in the comfort of adjustable heel fins. Most beginning divers adjust their straps so tightly that no amount of stumbling on the beach or tumbling in the surf could possibly shake them off. But having the straps too tight can cause two major problems, one of which is cramps. Having your straps too tight may result in terrible cramps in the arch of your foot.

Another disadvantage of adjusting the fin straps too tight is that under excessive stress they may break. Straps do not have to be very tight to keep the fins on. With booties on and with the right size fins adjusted properly, your feet should be as comfortable as they would be in a pair of jogging shoes (before you run the marathon — not after).

The size and stiffness of the fin you choose depends upon a wide variety of factors. One of these is the type of dive you intend to use the fin for. Do you plan to snorkel, scuba dive in tropical water or, scuba in cold water? The bulkier the equipment, the larger size fin you will need to push yourself through the water. Another factor to consider is the size and strength of your body. Most divers should evaluate the efficiency of their fins during an endurance kick and not under maximum exertion. A too large blade can be more of a problem than an undersized blade. Small women who purchase the same size fins as their boyfriends often have this problem.

YOUR FIRST EXPERIENCE WITH FINs

Although many people wearing fins for the first time instinctively kick properly, most do not. If you are just beginning and have what your dive instructor or buddies describe as a weak or spastic kick, don't give up; it just takes time. It may help to begin developing your kick with small fins. All too often, the use of large fins at first retards good kicking movement.

I once had a student in a basic diving class who was large and athletic. He worked as a construction contractor. Because he was the biggest and meanest person in the dive class, he bought the biggest and meanest pair of dive fins available. But he did not have an instinctive kick; in fact, he had the worst kick I'd



Dacor, Turbo-Fin



Dacor, Turbo I



Dacor, Turbo II



Dacor, TX1000

FIN Roundup

ever seen! Not only would his wild thrashing with huge fins not propel him forward, but would actually move him backward in the process! I have never understood the physics of this kick and, although I have tried, I have never been able to recreate it. However, after a few weeks of working with smaller fins, he developed as strong a kick as anyone. Now he moves like King Kong under water as well as above.

Once you have developed a good kick, you should be comfortable with your fin size. If not, try on as many fins as possible and have your buddy examine your underwater performance before making a purchase.

FIN DESIGN

There are more than 100 different fin designs on the market today. There are power fins, endurance fins, and speed fins. However, describing a fin as strictly a power fin or an endurance fin can be rather difficult. One that is a power fin for a small person could be an endurance fin for a larger person. The most realistic test is the one made by the diver trying on a variety of fins and making a personal decision. If you're uncertain about any fin, ask your local dive store: most have several fins available for comparison.

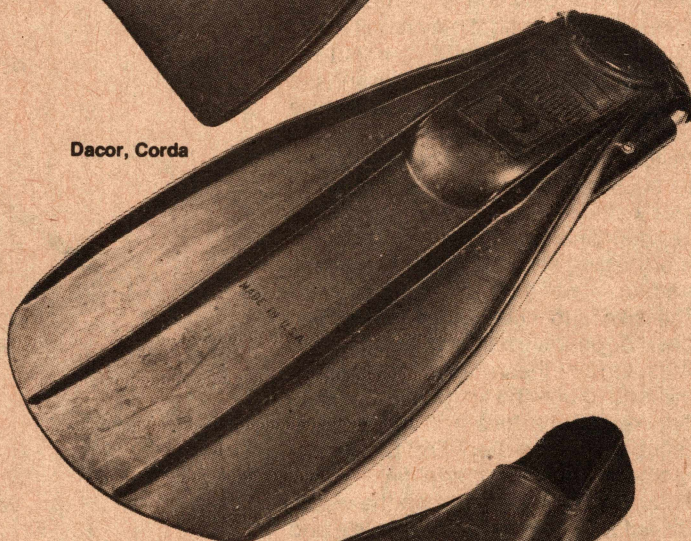
VENTS

There are many different features available on fins today, and vents are probably the most interesting. Vents are holes located somewhere on the blade of the fin which allow water to pass through. This action of water passing into a vent and out the other side (very loosely analogous to the intake and output of jet engines) has given rise to such names as Rocket, Jet, Turbo and Hydrojet just to name a few. However, the value and function of these vents are certainly not agreed upon by the engineers of the various manufacturers.

The position of vents on fins and the direction of water flow through these vents varies greatly from model to model. However, the most common design places the vents just below the foot pocket allowing water to flow from the top of the fin to the back of the fin during the down



Dacor, Corda



Farallon/Oceanic, Fara-Fin II



Mares, Sea King



Mares, Plana

stroke. There are two functions for this kind of vent; one is the reduction of resistance caused by that portion of the fin which is stiffest and perhaps least functional in producing forward thrust. Instead of pushing the water down with this portion of the fin, the water is simply allowed to flow through. You then get nearly equal thrust with significantly reduced effort. The other function of the vent is to reduce turbulence on the backside of the fin during the down stroke. When you kick down, a vacuum is created on the backside of the fin and water which could be creating thrust as it flows over the tip of the fin rushes back into this vacuum. This reduces efficiency. The vent allows the water to flow from the non-productive portion of the fin to the backside to fill in this vacuum, thus allowing water flowing off the tip to produce thrust.

It is a great theory, but not everyone can agree with it. Although most manufacturers produce fins with this kind of vent design, many have gone to other designs and several have avoided vents altogether. The Dacor Turbo fin, the Farallon Fara-Fin II and the White Stag Super Stag are all very similar in shape to the front-to-back flow through vent design, but they have no openings. White Stag manufactures a fin with vents which cause water to flow in a reverse direction; the Hydro-Stream fin allows water to flow from the backside of the fin to the front side during the up stroke!

You might expect to be able to determine the best method by trying on these designs. Unfortunately, it's not that simple. I found some fins of the front-to-back flow through design, some of the non-vented fins, and even the reverse action White Stag fin to be among the top 20 percent for my own personal preference. In fact, of my favorite four fins, two were front-to-back flow through fins, one was a back-to-front flow through design and one was non-vented. I certainly couldn't decide which was more functional.

You would also expect that after the front to back design and the back to front design, I would have examined all possible vent designs; not quite. U.S. Nemrod makes two fins with very different



Mares, Sea Hawk



Mares, Concorde



Nautilus, Flap Fin



Scubamaster

FIN Roundup

vent designs. The Nemrod Venturi Power has a vent that allows water to flow in at the end of the foot pocket on the down strike (power intake) and to flow out the very tip of the fin (power exhaust). Nemrod also makes the Venturi Delfin which also has water intake at the end of the foot pocket on the down stroke, but has the exhaust at nearly the end of the fin on the same side of the blade — no water flows through to the other side at all. The Venturi Power also has stabilizing veins on the top of the blade which maintain an even flow of water over the blade and prevent side-to-side slippage.

I also tried a prototype fin, to be manufactured by Nautilus Systems, tentatively called the Flap Fin. This design has an independent flap of rubber which allows the blade to open and water to flow through during the up stroke (reducing up stroke resistance) and which closes (providing full blade power) during the down stroke.

I concluded that the presence or absence of vents is not the most important consideration when selecting fins. Size, the stiffness of the blade and the comfort of the foot pocket are.

FOOT POCKETS

There are two kinds of foot pockets available, open heel and shoe. The shoe fin is designed for divers swimming in warm, calm conditions. If you dive in the tropics where a neoprene bootie is unnecessary, this design will make sense for you. The two important reasons for wearing a bootie are to keep feet warm and to protect your feet. Shoe fins are comfortable and quick to put on, but fit is critically important. If the foot pocket is too large, the fins will cause blisters, and if the foot pocket is too small, you will get cramps — each is equally unpleasant. Fit is of major importance and should be tested in a pool or open water before a purchase is made. Shoe fins have a tendency to come off in high surge conditions. If you must contend with big waves and beach entries, you will probably prefer the open heel design.

Open heel designs are valuable for



Scubapro, Jet Fin



Scubapro, Full Foot



Selpac/Cavalero, Hydrojet



Selpac/Cavalero, Super Hydro

three reasons. They stay on better than shoe fins in rough conditions; they allow fine adjustment; and they allow for the use of a bootie. Since the foot pocket of most open heel fins was designed for use with a bootie, they are generally far too large and rough for the unprotected foot. Although the use of heavy socks can permit the use of these fins without booties, it is only a temporary solution. Sooner or later you should buy booties.

Another important factor in the foot pocket design is rigidity. The foot pocket should distribute the force of the fin blade to your entire foot, not just a part of it. If you feel pressure on the sole of your foot or in the toe area, the fins are likely to cause cramps. A good fitting foot pocket will cover most of your foot, feel neither too tight nor too loose, and will not double over under the pressure of your kick.

HEEL STRAPS

Most recent designs in open heel fins have adjustable straps. This allows you to adjust the fin to perfectly fit your foot. There is not much difference between most manufacturer's heel straps except for a few notable exceptions. Dacor, Mares, and U.S. Divers produce fin straps with a small tab above the heel which allows you to pull the strap over the heel when taking the fins off or putting them on. This feature prevents the strap from becoming twisted and keeps your gloves from becoming stuck between the strap and your foot — a simple and useful feature.

The Farallon Fara-Fin II has a unique fin strap. Tension is created by two stainless steel springs on either side of the foot pocket. This feature allows the fin to fit a great number of people without adjustment. However, if your foot is especially large the tension can be adjusted.

The prototype Nautilus fin has a Velcro strap which allows the fin to be secured without strap tension, however, this strap must be adjusted each time it is put on.

RUBBER

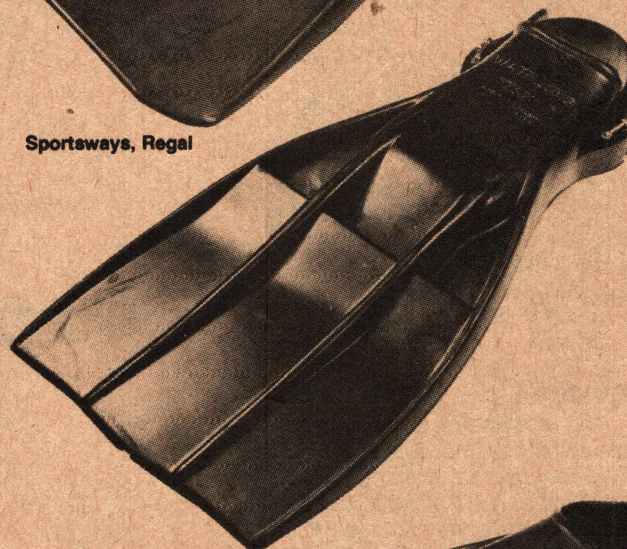
Almost all fins are made of high quality black synthetic rubber. And although the compounds vary to some degree, the



Selpac/Cavalero, Navy Champion



Sportsways, Regal



Sportsways, Waterlung 707



Submarex, Pro dive fin

FIN Roundup

quality of material used in making pro dive fins is fairly uniform. All materials have added ozone resisters and will last a great many years before any noticeable rubber reversion occurs. Some of the very inexpensive children's fins, which might be purchased in department stores, are made of a thermal plastic and although this is not cheap and is unaffected by ozone, it is not as resilient as rubber and has a tendency to tear. There are some exceptions to the use of black synthetic rubber, however.

Cressi makes some of their Rondine fins in blue and yellow — an underwater photographer's delight. They also come in black. Swimaster makes some of their Mark X fins in an amber colored rubber with a gum rubber foot pocket. The Swimaster UDT Duckfoot is made entirely of gum rubber, very expensive to buy but very resilient. The prototype Nautilus fin is made out of urethane.

Some fins float, but this doesn't mean they are made out of a drastically different compound. Achieving a specific gravity of less than one (causing rubber to float) is accomplished by adding additional amounts of a material called Styrene. The advantage to having your fins float is questionable. Certainly, if you lose your fins in the surf line, there is an added chance they will wash to shore if they float. However, if the fins are lost in deep water, they are probably more easily found on the bottom than floating just below the surface.

BLADE DESIGN

Certainly, the most interesting and noticeable feature of most blade designs is the presence or absence of vents. But there are some other factors of blade design which are worth attention. I would like to classify blade designs in three categories: heavy, light and racing. But, although there are tendencies for fins to fall into these groups, every model is different and many models fall somewhere in between. Most shoe fins have relatively light blades since they are used most often with light scuba (no wetsuit or weightbelt) or for free diving. Of course, there are exceptions, such as the Dacor TX1000, which is the biggest and heav-



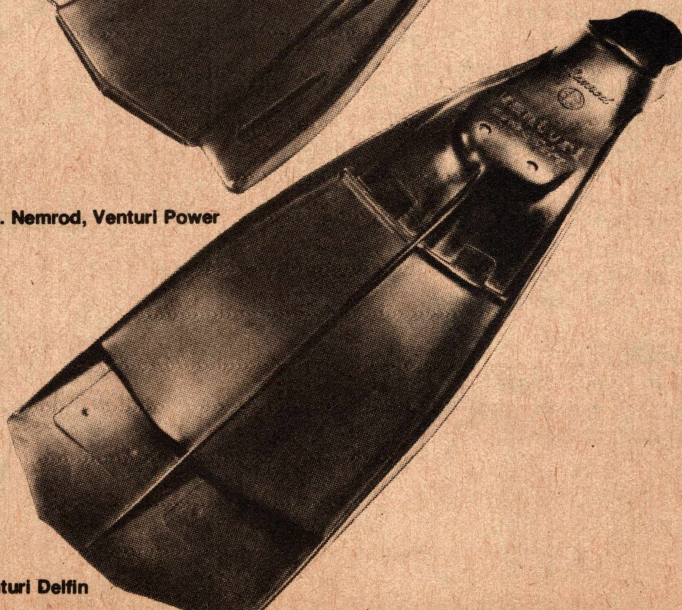
U.S. Divers, Otarie



U.S. Divers, Rocket fin



U.S. Nemrod, Venturi Power



U.S. Nemrod, Venturi Delfin

PRO DIVE FIN REFERENCE CHART

MANUFACTURER/ MODEL NAME	CATALOG NUMBER	LENGTH X WIDTH	FLOATS YES/NO	FOOT POCKET TYPE	POCKET WIDTH	VENT TYPE	RETAIL PRICE	SPECIAL FEATURES
AMF SWIMASTER								
Mark IX	2F96	21½" x 9¼"	No	Open heel adjustable	3½"	None	\$36.00	Popular sized blade
Mark X- Mark X Mini	3F97 3F98	21½" x 9¼" 20" x 9"	No	Open heel adjustable	3½" 3"	Front to back (3)	38.00	Popular sized blade with gum rubber foot pocket
Duck Feet UDT	3F99	21" x 8½" (med-lg)	No	Open heel non-adjustable	3½" in med-lg	None	48.00	Stiff bladed gum rubber power fin
Skin Diver	A10	18" x 8¼" (med-lg)	Yes	Shoe	Depends on size	None	30.00	Small, comfortable fin
Viking	A6B	18" x 8½" (medium)	No	Shoe	Depends on size	None	32.00	Small, light comfortable fin, blue.
BALCO-SUB								
Hydrodyn	856	22" x 8"	No	Shoe	Various sizes	Front to back (2)	\$28.00- 30.00	One of few vented shoe fins available
Dynamic	853	20" x 8"	No	Shoe	Various sizes	None	22.00- 25.00	Comfortable, light fin
CRESSI-SUB								
Anatomic	602	23" x 8½"	No	Shoe	Various sizes	None	\$32.00- 39.00	Fins are asymmetrical for right and left feet
Rondine Extra	601	20" x 8" (size 8-9)	No	Shoe	Various sizes	None	20.00- 34.50	Comfortable, light fin
Rondine Floating	605- 606	20" x 8" (size 8-9)	Yes	Shoe	Various sizes	None	26.00- 34.00	Available in blue and yellow
Comando USA	604	23½" x 9¼"	No	Open heel adjustable	3¾"	Front to back (3)	38.00	Large heavy power fin
Rondine "L"	603	30" x 8¼"	No	Shoe	Various sizes	None	41.00- 49.00	Competition speed design
DACOR								
Turbo	DTK (large) MTK (med.)	21" x 9¼" (large)	No	Open heel adjustable	4" in large	None	\$37.00- 34.00	Popular blade size
Turbo I	MVK (med.)	20" x 8½"	No	Open heel adjustable	3½" (med.)	Front to back (4)	34.00	Popular blade size
Turbo II	TVK (large)	21" x 9"	No	Open heel adjustable	4" (large)	None	37.00	Comfortable, light shoe fin
Corda	C45K- C1315K	19" x 8½" (size 11)	Both available	Shoe	Depends on size	None	18.50- 28.50	Very large heavy fin
TX1000	TX910- TX1315	24½" x 9½"	No	Shoe with adjustable strap	Depends on size	Front to back (3)	40.00- 44.00	
FARALLON/OCEANIC								
Fara-Fin II	14-1002	22" x 9½"	No	Open heel adjustable	3½"	None	\$44.95	Self-adjusting spring loaded heel strap
MARES								
Sea Hawk	5029- 5028	23" x 8½" (large)	No	Open heel adjustable	3¾" (large)	Front to back (3)	\$36.00	Popular blade size
Plana	5002- 5005 & 5011- 5015	22½" x 8½"	Both available	Shoe	Depends on size	None	29.00- 31.00	Unique fiberglass clear blade
Concorde	5021- 5025	29" x 9" (size 10-11)	No	Shoe	Depends on size	None	40.00- 50.00	Competition speed design
Sea King	5043- 5046	19" x 8½" (size 11-12)	Yes	Shoe	Depends on size	None	18.00- 24.00	Comfortable, light fin
NAUTILUS								
Flap Fin	Prototype	21½" x 9½"	No	Open heel adjustable	3½"	Back to front	N/A	Flap in center of fin opens with up stroke & closes with down stroke
SCUBAMASTER								
Scubamaster	1381- 1382	21" x 9½"	No	Open heel adjustable	3¾" in large	Front to back (6)	\$48.00	Popular sized blade, blue
SCUBAPRO								
Jet Fin	350- 352	20½" x 9½" (large size)	No	Open heel adjustable	3½" in large size	Front to back	\$38.00- 45.00	Popular blade size
Full Foot Fin	25-340-400- 25-340-900	16½" x 7" (size 5-7)	Yes	Shoe	Depends on size	None	19.00- 31.00	352 size is extremely large Small, comfortable light fin
SELPAC/CAVALERO								
Super Hydro	SFR 650	19" x 8" (size 9-11)	Yes	Shoe	Depends on size	None	\$15.00- 23.50	Comfortable, light fin
Navy Champion	SFR 635-636	23½" x 9½"	No	Open heel adjustable	4¼" in large	None	22.50- 29.00	Popular sized blade, though longer than most
Hydrojet	SFR 655	22½" x 9¼"	No	Open heel adjustable	3½"	Front to back (3)	14.00- 16.25	Popular sized blade
SPORTSWAYS								
Waterlung 707	707- 707M	20½" x 9" 19½" x 9"	Yes	Open heel adjustable	3½" 3¼"	Front to back	\$30.00	Popular sized blade, floating fin
Regal	247R- 250R	18" x 7½" (size 9-11)	Yes	Shoe	Depends on size	None	16.50- 18.50	Small, comfortable fin
SUBMAREX								
Pro dive fin	12-114	19¼" x 8¼" (sizes 5-7)	No	Shoe	Depends on size	None	\$22.00	Comfortable, light fin
U.S. DIVERS								
Rocket fins	6211	22" x 9½"	No	Open heel adjustable	3½"	Front to back (3)	\$32.95	Popular sized blade
Mini Rocket	6315	21" x 9¼"	No	Open heel adjustable	3½"	Front to back (3)	32.95	Small sized rocket fin
Otarie	6075- 6079	18½" x 7¾" (size 8-9½)	No	Shoe	Depends on size	None	24.50- 28.95	Comfortable, light fin
U.S. NEMROD								
Venturi Power	6445- 6446	20½" x 9"	No	Open heel adjustable	3¼" small size	Front to tip of blade	\$48.50- 52.50	Unique vent design, stabilizing veins for minimum side slippage
Venturi Delfin	6450- 6452	26" x 7½" (size 7-8)	No	Shoe	Depends on size	Front intake, front exhaust	39.00- 43.00	Unique vent design, competitive speed fin
Cortez	6471- 6476	21" x 8½" (size 12-15)	No	Shoe	Depends on size	None	15.50- 30.00	Comfortable, light fin
WHITE STAG								
Super Stag	52118- 52119	22½" x 9½"	No	Open heel adjustable	3¾" 4"	None	\$42.00	Popular sized blade
Hydro Stream	52135	21" x 9"	No	Open heel adjustable	3½"	Back to front	36.00	Popular sized blade
Professional	52130- 52134	19" x 8¼" (size 10-12)	No	Shoe	Depends on size	None	21.00	Comfortable, light fin

FIN Roundup

iest fin I tried. Most open heel fins are for heavier use and tend to be broader, stiffer and heavier than shoe fins. Racing fins have a very long (approximately 30 inches) and flexible blade. This extra long blade has proven successful in racing, a very popular sport in Europe, and is generally used in pools with only mask and snorkel. The evolution of this sport developed the racing fin design, but many people now feel that the fin is useful for deep free diving and for scuba. However, the fin was not designed as an endurance fin, it was designed to perform best at maximum effort.

The Mares Plana is a deviation from the rubber blade. The Plana is made of fiberglass reinforced plastic. This clear plastic blade recovers faster and is more flexible than rubber.

SUMMARY

If you were confused about fins before reading this, I bet you're really confused now! Seriously though, I found fins to be far more interesting than I had expected. For instance, some of the designs seem to make all the sense in the world and some seem to make no sense at all. However, a reasonable test of fin efficiency is more complicated than you might expect. Dr. Fred Fischer helped me try these fins in a swimming pool. My procedure was to swim a few laps with a strange looking pair of fins, come up laughing and then suggest to Fred that these fins had to be designed by the dumbest moron ever to suck on a snorkel. But then Fred would try them and say, "Gee, I think they're swell." This would make me feel like a jerk so I learned to temper my reactions.

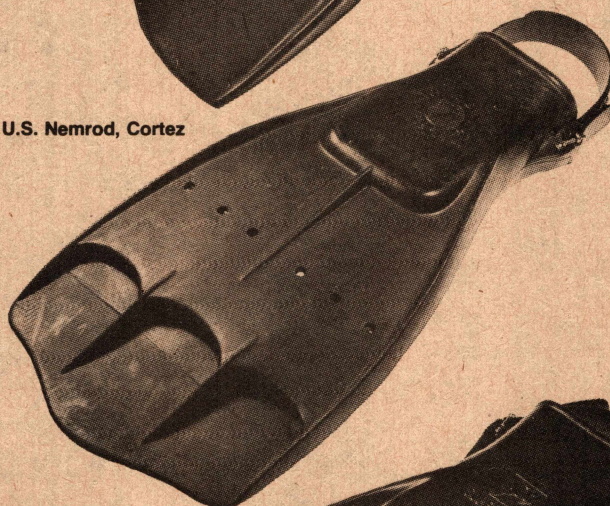
But all this should drive a few points home. You can't make an intelligent fin purchase by looking at them or by counting the number of vents.

Before you buy, try a pair of fins in the water with the equipment you intend to use. See how the fin performs with great exertion and more important, see how it performs with a comfortable kick.

Remember, if your fins cause regular cramps, tire you easily, or cause you to lag behind your buddy, don't assume it is owing to your lack of strength and skill. Perhaps you should blame your fins. >>>



U.S. Nemrod, Cortez



White Stag, Hydro Stream



White Stag, Super Stag



White Stag, Professional

HIGH TECHNOLOGY. 80's SPORT STYLING. COMPLETE SELECTION.

Sea Jacket



Just because Seaquest's Buoyancy Compensators are high-technology equipment, superbly engineered, doesn't mean they can't be in *style*.

That's why we've put our fashion designers into high gear.

The result is "right-now" sport styling that's too long been missing in diving gear.

The Seaquest B/C has always been tops in the market. Now, more than ever, it *looks* the part.

From Seajacket II (a new, smaller, super-comfortable version of the industry classic), to the familiar workhorse of the diving class, the M-96, you'll find rugged, yet

fashionable materials in an upbeat collection of colors and designs for the '80s. *Plus* the features that have made Seaquest the industry benchmark—the most dependable and popular inflator sold, Seaquest Diamond Harness, an exclusive Rapid Exhaust valve, extra-tough inner bags, all screw-on fittings, mesh drain panels, Octapockets,TM key rings. And, most important, correctly distributed buoyancy without bulk.

Best of all, Seaquest offers the industry's widest *variety* of B/Cs—the right fit and equipment for every need.

Stop at your dive shop today. Take a look at tomorrow.



Seajacket II
for small to
medium
divers.

seaQuest[®]
The look of the 80's.

Send today for FREE full-color catalog • USA—Seaquest, 722 Genevieve St., Suite N, Solana Beach, CA 92075 (714) 755-5196 • HAWAII—Rann, Inc., 2835 Ualena St., Honolulu, HI 96819 (808) 836-3557 • CANADA—Seaway Manufacturing Ltd., 17919 Roan Place, Surrey, B.C., V3S 5K1 (604) 576-9424.

Technifacts

BY E.R. CROSS

HAWAIIAN DIVING: THEN AND NOW

On the long canoe voyages which carried the Polynesians across the Pacific, food from the sea was an essential supplement to the cargo of bananas, coconuts and the meat of pigs, dogs, and chickens. In Hawaii life was equally centered around the sea — as a source of food and as a highway between villages along the shore and between islands. Food was abundant, life was easy, and the sea soon became a vast arena for water sports. Swimming, surfing, fishing, canoe racing, and diving grew in popularity, keeping citizens and warriors in condition.

Diving and underwater swimming were important in the lives of ancient Hawaiians, as evidenced by their legends and chants. One myth of creation, the *Kumulipo*, says the land grew from the sea. Another widely related tale told of the demi-god Kama-pua'a. He was a *kapua* — a being who could change him-

self at will from man to animal and back again. One of Kama-pua'a's favorite forms was the pig, another was the fish, *humuhumu-nukunuku-a-pua'a*, (the grunting angular pig fish). So named because of the grunting made when feeding.

The sea was called *kai*, but early Hawaiians further distinguished areas of the sea by their characteristics, considering depth and the type of fish caught. One section of the water was called *kai-o-kilo-he'e* because the octopus, (*he'e*), was speared there. In deeper water the diver-spearfisherman sought the octopus in the area called *kailuhe'e*. At depths as great as nine meters (30 feet) divers took cowry shells, (*leho*), and pearl shell, (*pa*), from which they made fishing lures and hooks. They also collected the red sea algae offered to special gods at fishing shrines, the *ku'ula heiau* shrines, different from all other types. Three ancient *ku'ula heiau*, part of a prehistoric fishing village near Barbers Point, Oahu, have been discovered.

Fishing was the most common method of food gathering used by ancient Hawaiians. Fish were caught with nets, traps, hooks and lines, spears, poison, and by hand. Diving and underwater swimming played a part in all forms including, occasionally, hook and line fishing for the fishermen often dove to clear hooks tangled in deepwater coral. They also used their dive skills to tie anchor lines to small coral outcrops so canoes

would be held exactly over the best fishing site. Other divers were skilled at taking fish with a spear.

Nets were important in providing a large supply of fish. A long net called *kupo* was stretched from deep water, where it was anchored to coral by the diver, to a shoal end. The *pouono*, also a long net, was similarly anchored by a diver but stretched across an underwater ravine or gulley, usually a sand channel running through the coral reef. The *hina'i-ho'olu-ulu'u* was a basket or trap, weighted by a carved stone sinker, placed underwater by divers who took the *hinalea*, a small fish of delicate flavor. Other fish which sought refuge in holes in the ocean bottom or in the coral reef, such as the *kala* and *manini*, were taken by divers who, when they saw fish enter a hole, dove to the bottom and caught them by hand. This method of fishing was walled *hahamau* (fishing with one's hands). Turtle, *he ea*, and spiny lobster, *he is iwi mawaho*, were also taken.

Early explorers of the islands wrote of the dive ability of the natives. One such reference was by a John Bartlett who wrote in his diary August 22, 1791, that a Hawaiian diver, supposedly looking for a lost anchor belonging to the ship *Gustavus III*, would dive below the surface of the water, lie with his back against the bottom of the canoe, and then, "after some minutes," return to the surface as though he had been to the bottom in his

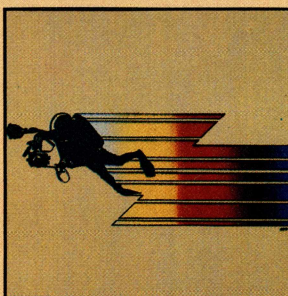
HEAVY DUTY 100% COTTON PRE-SHRUNK T-SHIRTS

DEALERS

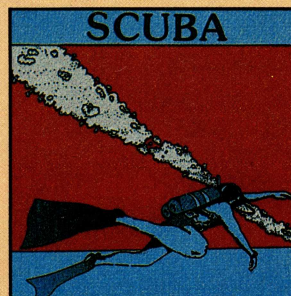
WELCOME



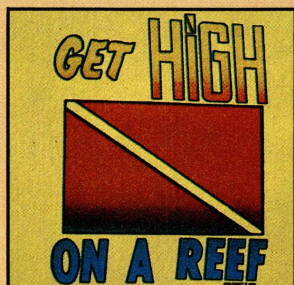
107



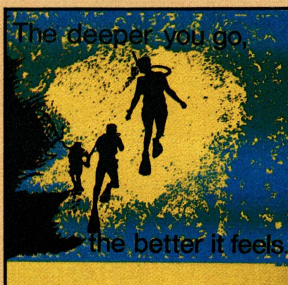
265



326



52



419



323

DEALERS

WELCOME

SHORT
SLEEVE
\$7.95

VISA

TO ORDER CALL TOLL FREE

1-800-874-6619

MON. - FRI. 8AM - 5PM

IN FLORIDA (904) 234-8805

SURF HUT — Panama City - Ft. Walton - Destin - St. George Island

MASTER
CHARGE

LONG
SLEEVE
\$9.95

47th STREET

NIKON, CANON 35-SLR, & IKELITE
UNDERWATER PHOTO COMBINATIONS

NIKONOS III w/35mm lens . . 329.50

SEIKO Divers Watch

Pressure Tested to 500' . . . 119.50

Sekonic L164 Marine Meter 89.90

NEW IKELITE SLR and Motor Drive
Housing Outfits w/camera lens
& winder

Canon AE-1 w/50mm f1.8 549.50

Pentax ME or MX w/50mm f2 499.50

Olympus OM-1MD w/50mm f1.8 549.50

Canon A-1 w/50mm f1.8 649.73

Minolta XG-7 w/50mm f2 499.50

MINOLTA Pocket Camera w/housing. . . 74.95

Canon AE-1 w/50mm f1.8 419.00

Nikon FE w/50mm f1.8 515.00

Olympus OM-1MD w/50mm f1.8 399.50

Olympus OM-2 w/50mm f1.8 525.00

ELECTRONIC FLASHES IN HOUSING

Vivitar 283 139.50

Vivitar 285 149.50

Sunpak 411 147.95

SUNPAK MARINA 28

Electronic Flash for Nikonos Cameras

or Ikelite Housing 299.50

Write for free catalog

Send your inquiries to: Dept. w

47st. photo INC.

67 W. 47 Street, New York, N.Y. 10036

TEL (212)260-4410

Toll Free Orders Only **800-223-5661**

Miami #1

PRO. DIVE SHOP
AND
SPORTING GOODS



**Aquanauts
Sporting Goods**

• Sales • Rentals • Repairs

• Hookah Equipment

• Ready to wear

• Sporting Goods



Please Rush Me 1980 Catalog

☐ U.S. AQUANAUTS . . . \$2.00

☐ CRESSI-SUB & PATCH. \$3.00

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Aquanauts Sporting Goods

35 S.W. 7th AVE.

MIAMI, FLA. 33130

Open 6 day's 9 a.m. to 6 p.m.

Closed Sunday

Phone: (305) 545-9000

M-1

search for the lost anchor. This particular diver could remain submerged longer than any man Bartlett had ever seen.

History also records that what is now called Pearl Harbor was called *Wai Momi* by the ancient Hawaiians. *Wai*, water, (specifically fresh water, probably called this because of the large number of artesian springs, creeks, and rivers that flow into Pearl Harbor), and *Momi*, pearl — thus Pearl Waters. In 1788 John Mears made plans to work the pearl beds of *Wai Momi* on a commercial basis. King Kamehameha learned of the possible value of the pearl fisheries and claimed them for himself. The king "employed" many divers to harvest the pearl oysters which, in those early days, were found in abundance. As a matter of interest, the pearls from Pearl Harbor were variously described as excellent, good, or, by Mathison in his narrative written in 1825, "... about two o'clock reached Pearl River, so called from the pearls which are found in small quantities in its bed. The specimens I saw appeared to be inferior."

Also stated in Mathison's narrative is: "The women are excellent swimmers and divers, to which they are habituated from earliest childhood, insomuch that one would almost think the water was their natural element."

No artifacts have been recovered indicating the use of diving aids by early divers, nor did they use fabricated heads on their spears. Sketches and early photographs of Hawaiian spears show two general forms, both made of hard wood. One form of spear wielded by diver-fishermen had a single sharp point. The other had three narrow wooden prongs, very similar to the popular Hawaiian sling in use today.

Modern diving in Hawaii varies from the youngster with mask, flippers, and snorkel, paddling over a coral reef so shallow it can be touched with the fingertips, to helium-oxygen dives by U.S. Navy divers training for submarine rescue at depths in excess of 180 meters (585 feet). In between these extremes are the thousands of skin divers, the few underwater mechanics who build harbors and lay submarine pipelines, and the underwater spearfishermen who supply food for their families.

Most of the Navy diving is centered at the submarine base in Pearl Harbor, where a special tank is used to train submariners to escape from crippled or sunken submarines. Submarine rescue and fleet salvage ships stationed in island waters carry several divers and tons of salvage and dive gear, including oxygen-helium outfits with support equipment.

Divers in the Navy's explosive ordnance demolition unit are based at Pearl Harbor's West Loch. These highly trained specialists are the famous Frogmen, trained and equipped for duties ranging from search and recovery to reconnaissance and combat. Some of the most advanced diving and support equipment

The diving equipment it pays to own

The Fishers underwater metal detector



OUR MOST
ECONOMICAL
DETECTOR

MARK 1

\$240
(Plus \$4.75 shipping)

• SALT OR FRESH WATER
• DETECTS ALL METALS • FULLY
TRANSISTORIZED • 11" SEARCH COIL • DETECTS A PENNY
AT 4" — LARGER OBJECTS AT 3' • 1MA METER • 9V BATTERY
• SINGLE KNOB CONTROL & SWITCH • 2 YEAR WARRANTY

You've invested money in diving gear — now invest in a metal detector and start getting a return on your investment. With a Fishers metal detector you'll begin finding all those rings, coins, motors and anchors you've been passing over all these years and never saw. Diving with a Fishers detector is fun and could be profitable.

MARK 3 (Most popular) \$325

MARK 5 (Sensitive w/Audio) \$465

MARK 7 (Boat Towed) \$650



Find out more about these fine Fishers' products:
Write for our complete catalog.

J.W. FISHERS MFG. CO.

ANTHONY ST. (DEPT. SO) TAUNTON, MASS. 02780
(617) 822-7330

LEARN TO BE A PROFESSIONAL DIVING INSTRUCTOR



In as little as seven days, you can learn to become a nationally recognized Diving Instructor in the warm waters of the beautiful Florida Keys. This is not a seven day testing session, but a comprehensive training program by the

**PROFESSIONAL DIVING
INSTRUCTORS COLLEGE**

Write or Call for information:

**HALL'S DIVING
CENTER &
COLLEGE**

1688 Overseas Hwy. (305) 743-5929

Marathon, FL Keys 33050 743-5521

N.S.T.C. — P.D.I.C. — P.A.D.I. — C.M.A.S.

Action Ready



**in sand, dust,
snow and underwater**

ewa

Flexible Camera Housing



underwater...



at the beach...

The "Space Suit" for your camera!

Run, climb, walk, swim, float, fly or dive into the most extraordinary situations with an EWA protective camera housing. Recognized by seasoned photographers for its unexcelled flexibility, underwater to 33'. Optical Glass Lenses. Double Laminated. Salt water proof. Sizes: All standard SLR. "F" \$54.95; + small strobe, small winder: "FX" \$59.95. Larger SLR, + strobe or lenses to 100mm: "FPN", \$69.95. (17 other types available). For still and movie cameras. See your dive shop or photo dealer or write for more information.

PIONEER & COMPANY

216 Haddon Ave., Westmont, N.J. 08108 (609)854-2424

MOVING?

DON'T MISS A SINGLE ISSUE OF SKIN DIVER!

Let us know your new address right away. Attach an old mailing label in the space provided and print your new address where indicated.

QUESTION ABOUT YOUR SUBSCRIPTION?

When you write, be sure to include a label. It helps us serve you more promptly.

TO SUBSCRIBE OR EXTEND YOUR SUBSCRIPTION—

Check the appropriate boxes below:

- ☐ New subscription. Please allow us up to 60 days to get the first copy into the mail.
- ☐ Renewal subscription. Please include a current address label to insure prompt and proper extension.

- ☐ 1 year \$10.95 or ☐ 2 years \$19. (U.S., Territories & Military only. Other countries add \$3 per year.)

- ☐ Payment enclosed or ☐ Bill me (U.S. only)

MAIL TO: SKIN DIVER
6725 Sunset Blvd.
Box 3295
Los Angeles, CA 90028

Name _____

Address _____

City _____ State _____ Zip _____

ATTACH LABEL HERE

(If label is not handy, print OLD address in this space.)

TECHNIFACTS

available is used by this group, including mixed gas scuba, closed circuit scuba, diver held sonar, swimmer propulsion units, underwater photo gear and TV equipment, plus a variety of non-magnetic, anti-mine warfare tools and instruments. The little-known work of Marine Corps reconnaissance divers is probably the most exacting and exciting of all military diving. Sometimes working from submarines, sometimes from the air, theirs is always demanding and rewarding work.

Most, but not all, Air Force diving is limited to pararescue work by highly trained specialists. Pararescue divers must first qualify as paramedics, then be trained as paradivers. Their rescue missions often take them far out to sea, so nearly all paradiving is done from aircraft with long-range capabilities. However, an elite group of Air Force divers is trained as a recovery group for capsules landing in the sea after space flight. This group works from helicopters and does not parachute into the water as do paradivers.

In Hawaii there is very little space for expansion of harbors and related marine installations. Weather and sea conditions lend themselves to safe ship navigation. As a result there is little marine construction and seldom the need for ship salvage or repair by divers. In fact, there is only one company in Hawaii that maintains fully equipped divers on a full-time basis. Other marine construction firms recruit divers from local sources as required. In 1975 only one major project using divers was completed. In 1976 one major ship, a tanker, and one small fishing vessel were grounded and required the services of divers for salvage. One construction job was in progress and two planned in 1976, both completed in 1977. There is occasional work for a few well-trained scuba divers in search and recovery, small boat salvage, and minor construction projects. One company employs two divers on a part-time basis cleaning marine growth from ships' hulls to permit better speed.

Marine research diving in Hawaii was expanding for several years but has been declining since 1974. One company maintains an office staff and occasionally engages in bathymetric survey work for government organizations, determining best locations for piers, outfall sewers, and intake lines, and in beach erosion surveys. The University of Hawaii, the Hawaii Department of Land and Natural Resources, Department of Fish and Wildlife, the U.S. Bureau of Fisheries, and Sea Life Park also engage in some research diving.

NATIONAL SCUBA REPAIR

DIVING EQUIPMENT REPAIR IS OUR ONLY BUSINESS
3 DAY SERVICE

Regulators \$14.00 (1-hose) \$18.00 (2-hose)

All Prices Are Plus Parts
SEND YOUR EQUIPMENT NOW
OR WRITE FOR COMPLETE PRICE SHEET
DEALER INQUIRIES INVITED

16442-B Gothard St., Huntington Beach, Ca. 92647

DIVING INSIGNIA

T-SHIRTS

- Salvage Diver
- Research Diver
- Rescue Diver
- Wreck Diver

SWEATSHIRTS

- U.S.N. Seal

JACKETS

- Cavern Diver
- Divemaster
- U/W Photographer
- Scuba-Instructor

TO SEE THESE AND MANY MORE SEND \$1.00

For Our 1980 Catalog of Fine Quality Insignia Outerware
MILITARY GRAPHICS—BOX 9671, Dept. 8—Balt., Md. 21237

AN
U/W ROAD
TO NOWHERE?
or
THE REMAINS OF
ATLANTIS?

skin diver

looks at this strange chain of massive square-cut stones off Cay Say, plus a lot of other interesting dive spots in the area in the April issue.



FAMOUS "SKINDIVER" CUSTOM WET SUITS

Only **\$57⁹⁵**

Order direct and **SAVE!**
Satisfaction guaranteed

Men's or women's custom tailored to your measurements with high pants and collar for super warmth. Finest wet suit material, completely nylon lined. Features sewn seams, non-corrosive zipper and twist locks. 1/4" or 3/16" material — mark choice below. Just fill in your measurements and mail with check today. Quick delivery. Your choice of thickness.

1/4" 3/16"

Sex Age

Height

Weight

— Ankle

— Calf

— Knee

— Thigh

— Hips

— Waist

— Chest

— Neck

— Wrist

— Forearm

— Elbow

— Biceps

— Ankle to Knee

— Ankle to Crotch

— Ankle to Waist

— Shoulder Seam
to Crotch

— Wrist to Elbow

— Bra and Cup Size

— Wrist to Armpit

— Hat Size

☐ GLOVES \$9.95

☐ BOOTS \$10.95

☐ HOOD \$9.95

MEN OVER 225 lbs. ADD \$15.00
WOMEN OVER 180 lbs. ADD \$15.00

Add \$4.00 Postage & Handling SORRY, NO
C.O.D. (\$5.00 Canada, plus currency ex-
change) Clip and Mail This Handy Coupon
Today! To: **Skin Diver Wet Suits**
1632 S. 250th
Kent, Washington 98031

Name

Address

City

State

Zip

Open sea divers, those who harvest products from the sea or seafloor, primarily harvest black coral or are underwater fishermen. The most romanticized are the black coral divers, primarily those of Maui Divers firm. These men work at depths from 30 to 67 meters (98 to 220 feet) harvesting black coral trees from which exotic jewelry is carved. Perhaps a dozen divers work at this fulltime.

The largest group of commercial divers in Hawaii is the underwater fishermen. Using techniques developed by the Polynesians hundreds of years ago, modern divers spread nets from deep water into shoals and across deepwater ravines, place fish traps, and spear fish.

The earliest Polynesian settlers knew the importance of conservation and set up *kapu* to protect selected areas as a conservation measure. In modern Hawaii, overfishing has greatly depleted fish stocks in the waters of nearly all islands. Fishing techniques of many divers have destroyed fish habitats, causing even greater loss to the fish population. State agencies are considering legislation to control overfishing and are using education to correct destructive fishing habits. When these programs are in force, and as a result of benefits gained by the existing and proposed underwater park systems, Hawaii's marine life should stabilize and eventually return to the bountiful condition found by divers who explored the shores of Hawaii more than a 1000 years ago. >

FREE FLORIDA MAP

Bill Tant of Southern Skin Divers Supply and Bob Tant of Tant's Hatchcover Lounge in Birmingham, Alabama; have published a fold-out diver's travel map for Florida.

Bill Tant, a pioneer of southern dive spots, has mapped out select sites for a map you can plan a vacation around.

To obtain your free dive map, mail \$1 (for postage) to Bill and Bob Tant, Diver's Guide, 506 South 45th Street, Birmingham, AL 35222. >

CDC STAFF ADDITIONS

Charlie Maher, an award winning commercial photographer, has joined the faculty of the Commercial Diving Center. Maher will head the U/W Photography/Television department at CDC.

Under Maher, the CDC photography/television course is undergoing complete revision and updating in techniques and equipment to incorporate new technological advances.

The three week course is offered quarterly, with each class limited to 20 students, and spaces will be awarded on a priority basis to graduates of CDC's diving courses. Contact the Commercial Diving Center, 272 South Fries Ave., Wilmington, CA 90744, for information. >



6059 W. ADDISON
CHICAGO, ILLINOIS 60634
1-312-725-2155

Send for Free Brochure
or \$1 for Complete Catalog

K80 cu ft Tank Alum	114.00
Stabilizer Jacket	129.00
Pressure Ga 5000 psi	37.50
50 lb Lift BC w/Power Infl	99.50
Heavy Duty 15 x 30 Gear Bag	19.50
Sherwood Octopus	39.50
1/4" Textured Wet Suit	69.50
MR 12 II Regulator	109.50
US Divers Aquarius Reg	64.50
Pressure Depth Combo	69.50
Swimaster Mark 9 Fins	22.50
80 cu ft Tank J Alum	124.95
Vented Fins	18.95
Nylon II Wet Suit 1/4" Parkway	99.00
12 lb Weight Belt Set	19.95
Consheff 14 Reg	97.50
Voit Tri-View Mask	21.50
Voit Compass	4.95

ALL STATES EXCEPT FLORIDA
ORDER TOLL FREE
1-800-327-9191 ext 366
IN FLA 1-800-432-7999 ext 366
MASTER CHARGE & VISA ACCEPTED

ALL ITEMS IN STOCK
FOR IMMEDIATE DELIVERY

BERRY SCUBA
1717 Rand Rd.
Palatine, Ill. 60067
312-358-3848

BERRY SCUBATECH

Midwest's complete
training academy

We offer the complete

PADI program from the one
week basic SCUBA certification
to the full open water
instructor course. Call
or write for brochure.

312-371-3366 **Hours 10-9 Daily**
12003 S. Cicero **Sat 10-5**
Alsip, IL 60658 **Sun Closed**

STOP INTO ANY OF OUR STORES
FOR ABOVE ITEMS

On Your Way To Florida
Stop In For Super Savings
BERRY ATLANTA

3443 Stewart, Hapeville, Ga
Only Min. From I75 — 404-766-1186

STORE HOURS:

10-6 M-T-W

10-9 TH & F

10-6 SAT

CLOSED SUN.

Underwater life support systems are potentially dangerous to a non-trained user. Phone or mail order purchases of Scuba Tanks, Regulators or Buoyancy Compensators must include instructor's name and number or a copy of your certification. This ad does not constitute an offer to sell these items via mail order.

Danny's Super Spring Specials

A Wraparound Mask \$21.00



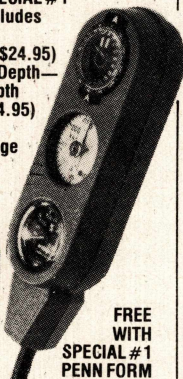
B U.S. Div. Rocket Fins \$18.00 (\$16.00 if purchased with wrap-mask)



C U.S. Div. BC 700 38 g. cart. & low press. inflator List—\$150.00 Danny—\$119.95 FREE—EXTRA 38 g. cart.

E Mini Brass Diver's Mark V helmet 3" high—\$18.00

SUPER SPECIAL #1 \$99.95 Includes Ikelite compass (\$24.95) U.S. Dive Depth—master depth gauge (\$34.95) Sportsway press. gauge (\$34.95)



FREE WITH SPECIAL #1 PENN FORM CONSOLE III INCLUDES MOUNTING (VAL. \$18.95)

SUPER SPECIAL #2 \$271.95 Includes Dacor Pacer Regulator (\$119.95) Dacor Alum. 80 cu. ft. tank with K-Valve (\$145.00) J-Val. add \$12.00



FREE with special #2 Molded Contour Bac-Pack (val. \$38.95)

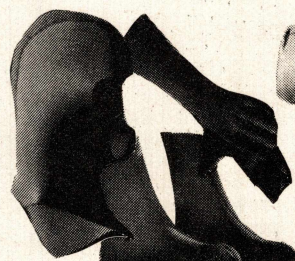
SUPER SPECIAL #3

Wet suit accessory package all items Nylon II, 1/4" Cold water hood (list \$34.95) \$22.95 Long, 5 finger gloves (list \$34.95) \$22.95 Hard sole boots (list \$29.95) \$24.95 Special Package Price \$69.95

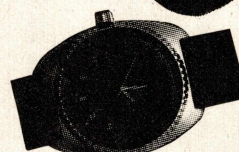


D. Knife—7" blade, butt cap, saw, & sheath—\$14.95

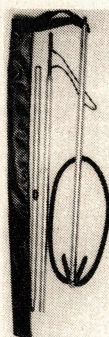
I. Deluxe Zipper duffel bag. Large 14" x 30" \$14.95



F. Bottom Timer BT-200 \$44.95



H. Time, Depth Watch Patented oil-filled Bourdon Tube depth gauge measures depth to 200 ft. plus elec. watch & dive bezel (list \$250.00) SPECIAL \$190.00



G. 3-Piece Hand Spear breaks down for easy transport. 6' 4" length 2" sections incl. case—\$33.95

FREE—BIG NEW CATALOG

- ☐ SUPER SPECIAL #1 Ikelite Comp./Depth. Ga./Pres. Ga. and Pennform Console III \$ 99.95
- ☐ SUPER SPECIAL #2 Dacor Pacer/Dacor Alum. 80 cu. ft. tk. & K-V. (J-Val. add \$12.00) and Bac-Pack \$271.95 Shipping \$ 12.00
- ☐ SUPER SPECIAL #3—Hood, boots, gloves \$ 69.95
- ☐ A. Wraparound Mask \$ 21.00
- ☐ B. U.S. Div. rocket Fins \$ 18.00 (With Wraparound Mask) \$ 16.00
- ☐ C. U.S. Div. BC 700 \$119.95
- ☐ D. Knife \$ 14.95
- ☐ E. Mini-Helmet \$ 18.00
- ☐ F. Bottom Timer \$ 44.95
- ☐ G. 3-pc. Hand Spear \$ 33.95
- ☐ H. Time Depth Watch \$190.00
- ☐ I. Duffel Bag \$ 14.95

PRICES SHOWN EFFECTIVE UNTIL APRIL 30, 1980

Use and operation of life support equipment should not be undertaken without qualified and proper instruction in their use. This ad does not imply the sale of life support equipment through the mail.

DANNY'S DIVE SHOP

1579 Grand Ave., Baldwin, N.Y. 11510
Tel. (516) 223-8989
Located bet. Sunrise Hwy. & So. State Pkwy.

Danny's Gift Certificates Available

VISA _____ MASTER CHARGE _____
(ALL CREDIT CARDS ADD 5%)
AMERICAN EXPRESS _____

Name _____
Address _____
City _____ State _____ Zip _____

SEA SCRUBBER™

UNDERWATER HYDRAULIC ROTARY BRUSH HULL CLEANING SYSTEM

The Sea Scrubber System is the result of eighteen years of research and development in manufacturing hull cleaning equipment. The Sea Scrubber is designed to clean a vessel of any size but is the most efficient for yachts, workboats, fishing trawlers and cargo vessels up to four hundred feet in length. The Sea Scrubber is capable of cleaning an area up to 3800 square feet per hour. For larger ships such as tanker and container cargo type vessels, we recommend our brush cleaning submersible, **Brush Sub**, which is unequalled for high performance and efficiency.

As well as being excellent for cleaning large commercial swimming pools, the **Sea Scrubber's** power unit can also be utilized for hydraulic tools such as chain saw, hydraulic drill, cable cutter, impact wrench, etc.

A single floating, twin hose system provides power to the Hydraulic Brushing Head. Dual rotation and power control are diver operated with a single control lever. Forward motion is achieved by brush rotation and the suction power of the system.

Write today for details and catalog.
Be sure to enclose \$2.00 for mailing costs.



SUB ENTERPRISES, INC.

P.O. Box 16531 • Irvine, California 92713
(714) 540-9455 Telex 678 401 TAB IR



Cleans up to 3800 sq. ft. per hour!

MEDIFACTS

(Continued from Page 36)

usually heal with little if any residue. The same is true of most other internal organs, with the notable exception of the brain and spinal cord. If these are hit, and prompt treatment denied, only partial improvement should be anticipated. Nerve cells that are weakened can recover, but those destroyed cannot be replaced. Spinal hits have sold a lot of crutches and wheelchairs. Finally, bone hits can surface years later as dysbaric osteonecrosis.

Question: It is true that a diver should increase his vitamin intake to aid in respiration and nitrogen elimination, as well as to improve his general condition?

Answer: There are always proclamations of great rewards if we'll only load up on one vitamin or another. Yet the vast majority of authorities still maintain that a healthy person eating a well balanced diet will not benefit from vitamin supplements, and divers are no exception. The only supplement claim that's been validated for divers is that vitamin E confers some protection against oxygen convulsions. This may be important if you plan to spend long periods near 300 feet.

Question: Have you ever known of a documented case of bends due to repeated breath-hold diving? What were the circumstances?

Answer: In days gone by, divers of the Tuamotu Archipelago would descend repeatedly to 100 feet and beyond, each dive lasting 1.5 to 2.5 minutes. By the end of the day, 10 to 30 percent of them would develop taravana (translation: to fall crazily). Symptoms included vertigo, nausea, paralysis, unconsciousness, and rarely, death. Taravana is considered to be decompression sickness.

According to P. E. Paulev, repetitive dives to 20-30 meters lasting 1-2 minutes and with surface intervals of less than 10 minutes lead to tissue nitrogen tensions in excess of those for no-decompression diving. He made 60 breath-hold dives lasting 2½ minutes with surface intervals of less than 2 minutes. He gradually developed nausea, dizziness, hip and chest pain, numbness, visual blurring, and shock, all rapidly reversed by recompression to 6 atmospheres in a chamber. He later reported several other breath-hold divers developed neurological hits under similar circumstances, all responding to recompression treatment. Moretti has reviewed some similar cases in Italian divers.

More recently, Spencer used his Doppler bubble detector to monitor a Japanese ama who made 30 dives of 53 seconds each to 15 meters in a period of 51 minutes. Although the total exposure was well within Navy no-decompression limits (100 minutes at 45 meters) and no symp-

(Continued on Page 73)



*This tag
means quality
Wet Suit
Material . . .*

SO DISTINCTIVE
Whether it's the now-classic G-231-N — or the economical R-1400-N, Rubatex neoprene is revealing in all the best suits.
You want to know you are in a suit made of the best possible material. Rubatex neoprene is that material.

**RUBATEX CORPORATION**
BEDFORD, VIRGINIA 24523
A SUBSIDIARY OF GREAT AMERICAN INDUSTRIES, INC.
WESTERN STATES: 14715 ANSON AVE., SANTA FE SPRINGS, CALIF. 90670, U.S.A.
EUROPEAN ADDRESS: 5, RUE D'ARTOIS, PARIS 8E, FRANCE

Sabretooth Blenny

(*Plagiotremus ewaensis*)

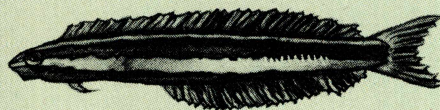
Sabretooth blennies are so-called because of their two fang-like teeth. It is believed that they use these only for defense, although these eel-like fish aggressively attack prey many times their size. They have even been known to attack divers. When feeding, these blennies don't appear to use the fangs, only their incisors. The diet of the blennies includes a strange menu of scales and fish mucus. They strike from a position above the reef, sometimes from hiding places within a crack or crevice, and dart unseen from below or behind. It is believed that the startled prey bolts forward and

loses to the blenny pieces of its skin and some of its body mucus. The Hawaiian name for *Plagiotremus ewaensis* means "ewa scale-eating blenny," in reference to this trait. □ The term sabretooth applies to several species of blennies with big canine teeth. The related genus *Meiacanthus* also has large canines, but in *Meiacanthus*

the teeth are venomous whereas in the species *Plagiotremus* they are not. *P. ewaensis* is found only in the Hawaiian Islands and is very closely related to *P. rhinorhynchus*. According to Dr. William F. Smith-Vaniz, *P. ewaensis* may only be a subspecies of *rhinorhynchus* and the two may not merit separate identities. Much of the ichthyological literature on this fish gives it the scientific name *Runula (ewaensis or rhinorhynchus)*, but according to John E. Randall the correct species name is *Plagiotremus*. □ In Hawaii the blennies are grouped into two families. One is Tripterygiidae, which is represented in the islands by a single species. The rest are grouped into the family Blenniidae. As in the Caribbean Blenniidae, these fish have a pair of forward pelvic fins, scaleless bodies and a set of comblike teeth used to scrape algae and other growths from rocks and corals. The dorsal fin of the Blenniidae is continuous (one fin) or notched (divided into two). The dorsal fin of the

Tripterygiidae is divided into three distinct segments. □ *P. ewaensis* is a brilliantly colored fish. Its overall body is gold or brick red with two iridescent blue horizontal stripes, the top of the lower stripe extending through the eye. These stripes are the most characteristic markings of the species. The juvenile fish looks quite different from the adult. After the egg hatches (which the male parent guards during the incubation period) the larvae drifts in the plankton currents of the open ocean. When it grows to about an inch in length it returns to shore or a reef area as a glassy, transparent fish.

In fact, many postlarval blennies of all types have been described as a separate species because of the striking differences in their final adult forms. During the postlarval phase the fish finds a suitable habitat and takes up life as a foraging adult. □ The forward pelvic fins are the chief identifying features of all blennies. The

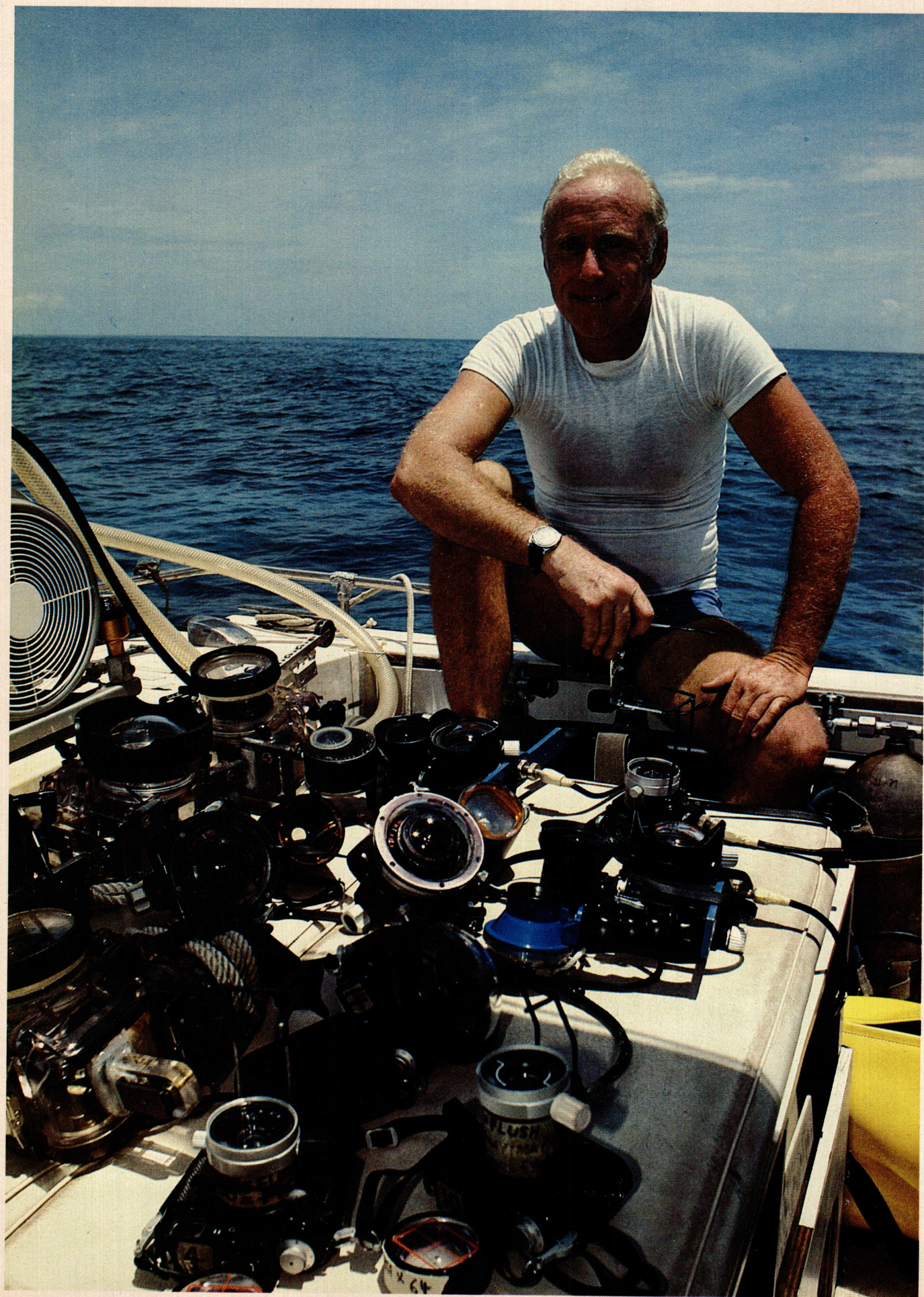


fins are quite strong and on these the fishes can lift themselves and look around. They can also walk on their fins and are even known to use them like hands to manipulate objects. The blennies are ferocious hunters, their big eyes looking around to spot prey from the security of the abandoned mollusk shells or worm tubes in which they hide. Generally, they are shy and secretive, except when attacking prey. Divers will find the sabretooth blenny to be quite brave. John Randall writes: "Their contact is little more than a touch but when you don't see them coming and believe you are alone on the reef, their little forays can be unnerving." □ Many of the blennies are shallow water fishes, often living in tidepools only one inch deep. Some types of blennies are even known to jump onto rocks or mudflats where they sun themselves for a time. The *Plagiotremus* species, however, live in relatively deep water, up to at least 120 feet. 🐟

Photo By Chris Newbert - Text By Hillary Hauser

The photograph was taken in 20 feet of water off Hawaii. Newbert used a Canon F-1 with a 50mm macro lens in an Ikelite housing, Farallon/Oceanic 2003 strobe. Shot at f16, 15 inches from subject, Kodachrome 25 film.





JERRY GREENBERG

UP CLOSE AND CANDID

TEXT AND PHOTOGRAPHY BY RICK FREHSEE

Twenty-five feet below the surface of the clear waters off Bimini, in the Bahamas, I watched a hooded figure in a black wetsuit and twin 72's hopping along the sandy bottom. With finless feet he bounded like a moon walker, slowly circling a formation of pillar coral until the view was perfect through trained eyes. Not a grain of sand was stirred to spoil the clear image. Just off to the side was \$20,000 under the sea: a half-dozen Nikonos cameras with curious bulging lenses; four SLR's in aluminum and plastic housings; a couple of Rolleimarin's; and a bevy of amphibious strobes and light meters. After more than an hour and seven or eight rolls of exposed film he surfaced, glanced my way, and with a sly grin proclaimed, "Well kid, that's the way it's done."

That was nearly ten years ago and that was my introduction to Jerry Greenberg, one of the most successful, knowledgeable, and controversial underwater photographers in the business. The relationship, happily for me, has developed into friendship and mutual trust, with Jerry often acting as informal advisor, critic and confidant.

Greenberg's photographs do not regularly appear in SKIN DIVER today owing to his almost total concentration on publishing projects. As a result, new readers may not be aware of his many accomplishments. Since the mid 1950's Greenberg has photographed free-swimming sharks, penetrated underwater caves, recorded endurance dives, documented scientific submersibles and man-in-the-sea projects and performed hydrodynamic photo surveys for the U.S. Navy. He was creating dramatic silhouettes, photographing night dives, using ultra-wide lenses and electronic flash, and experimenting with fisheyes and multiple flash techniques before most of us knew the meaning of an f stop. In the 1960's Greenberg's photographs were published more often in National Geographic than any other freelance U/W photographer and today he is considered by most professionals to be the best in the world.

Greenberg spent his formative years in the Chicago suburbs. Shedd Aquarium and the marine life exhibit at the Field Museum of Natural History pro-

vided material for photographic sojourns and sketches. Additional fuel to the fire was provided by a collection of National Geographics featuring the earliest color underwater photographs by Longley and Martin, the Ralph Waldo Miner articles with coral reef paintings and the U/W adventures of William Beebe.

Greenberg's parents had a winter residence on Miami Beach and as a teenager there he began to practice the "new" sport of spearfishing along the jetties. He also developed friendships with the local skin diving buffs. His first underwater photographs were made from the surface of the pool at the Cabana Club through a glass bottom bucket. After graduation from Miami Beach High, Greenberg spent two years in the Army where he continued his photographic interests and library research. He attended the University of Miami, upgraded his camera to a Leica, and with a new, 11 pound brass housing, began breath-holding photography dives in the Florida Keys.

1952 and 1953 were important years for Greenberg's personal development. He learned how to use the Aqua-lung. With his Leica Standard camera and a Hektor 28mm f6.3 wide-angle lens (the optical miracle of its day), he began to contribute photographs of spearfishing action to Nassau Magazine, and then, Leica and Argosy Magazines. He also contributed to a new magazine called SKIN DIVER including a cover photograph for the third issue (February, 1952) and the first underwater cover (March, 1953).

Jerry was also spending important time romancing his future wife, Idaz. This union produced three children who share an unusual adult relationship with their parents and a "ma and pa" publishing team with an impressive record. Greenberg, working with Jordan Klein, also produced a series of quality underwater housings. Later on, Jerry and Idaz independently produced high quality plastic and aluminum housings for Leica and Argus cameras under the Seahawk label. Although the design is antiquated by today's standards, inspection of one of these housings reveals excellent workmanship and materials. A spin-off from the production of the Seahawk

housings was a field book on techniques, *Underwater Photography Simplified*, which unintentionally put the Greenbergs into publishing.

In January, 1962, Greenberg realized a ten year dream with his first full length photo story for National Geographic on Pennekamp Park. The two part, 32 page feature entitled, "Key Largo, America's First Underwater Park," and "Florida's Coral City Beneath the Sea," paved the way for numerous Geographic assignments. Two more features, "Sharks, Wolves of the Sea" and "Buck Island, Underwater Jewel," also provided plenty of material for the soft cover books, *Adventures of a Reefcomber*; *Shark, Fish Men Fear*; as well as a photo-biography, *Manfish With a Camera*. By now Jerry had earned an international reputation and with it came many assignments with photo agencies, advertising firms, the U.S. Navy, and prestige publications around the world.

Disillusioned with the limited market in stock sales and assignments for underwater photographers, the Greenbergs turned solely to self-publishing. Two years were spent in the development of their first full color book, *The Living Reef*. Three and one-half years were spent in the production of the lavish *Guide to Corals and Fishes*, their best selling book to date. In addition to the books there are extensive series of posters, guide maps and postcards featuring the Florida Keys, the Bahamas and the Caribbean.

Recently Jerry and Idaz and son Michael, a budding 21 year old photographer/cinematographer, have completed new guide maps on Bonaire, Cozumel and the Florida Keys. Two books are also in production, tentatively titled, *The Radiant Reef* and *Dangerous Marine Animals*. The whole family gets into the act. While they have many additional interests, the two attractive daughters, Mimi, 19, and Simba, 23, periodically appear as underwater and topside models for the Greenberg publications.

While most readers are aware of their many books and posters, it is not generally known that the Greenbergs have provided tremendous leadership in the struggle for photographer's rights. Greenberg has battled some of the biggest names in the publishing and media

UP CLOSE AND CANDID

fields over misuse or unauthorized publication of his photographs, and as a result, he is not universally loved by some editors and publishers. Perhaps adding to the controversy is his refusal to be in the limelight or to become a public personality. He does not make public presentations. In crowds, which he avoids most of the time, he can appear aloof and perhaps even somewhat defensive. This outward appearance is deceiving as privately, while sometimes impatient and always the perfectionist, he is also warm, witty, and open to criticism.

This exclusive interview took place during several informal conversations with Jerry and Idaz at their spacious South Miami home and was concluded aboard his custom photo/dive boat for a rare visit with Jerry and Michael on a photo expedition in the Florida Keys. At age 52 he is still an athlete in the water and a master of U/W photographic technique. Read on for a candid conversation with one of the greatest.

SKIN DIVER: One of the most interesting techniques that I have seen you use is the "point and shoot" method of using a Nikons and wide field lens: you hold the camera out at arm's length or half an arm's length, and ignoring the viewfinder, start firing away. How did you develop that particular method?

GREENBERG: That's for taking advantage of grab shots or targets of opportunity. Things that happen quickly must be anticipated. I prefocus the lens, usually at two feet, and anticipate the field of view. The Cousteau people have been doing it with their movie cameras for years. It works best with ultra-wide angles or fisheyes very close to the subject: you just point and shoot.

SKIN DIVER: Your use of artificial light is usually quite subtle. Very few of your shots have heavy frontal lighting. How do you achieve such a natural effect?

GREENBERG: You are referring to what I call a "kiss of flash," just enough flash to fill in shadows and strengthen colors without a heavy handed approach. It takes years of work to anticipate exactly what your lighting will do. After awhile you know instinctively how to light a scene. I read the overall background with a light meter and go with it. I bracket my shots only by moving my strobe in and out. The real reason you don't see many of my shots with full frontal lighting is because I usually throw them away.

SKIN DIVER: How did you get interested in self-publishing?

GREENBERG: I felt it was a necessary move. I just got tired of accepting substandard fees and misuse of my material. I was fortunate to have good material left over from my first National Geographic

assignment for a book and then one thing led to another. Self-publishing provides unmatched satisfaction and gives us total control. It's our baby from conception to printing — if it flops we take it on the chin. If it is successful we can take our bows and walk away with a jingle.

SKIN DIVER: Would you care to say how many books you will sell this year?

GREENBERG: From January to January we will do about 70,000 pieces, including 30,000 books.

SKIN DIVER: You have had disagreements with numerous publishing houses. Would you care to comment?

GREENBERG: I have no problems with an editor or publisher who is ethical and does what he says he'll do. When copyrighted material is used without permission it is a violation of my rights and I have every reason in the world to go after them. What we are talking about here can mean a lot of money. I was recently paid \$12,000 from a publisher for unauthorized publication of my material; that's \$12,000 hard cash. I don't mean to imply that the publishing field is really any different from most any other business. You just have to look out for yourself, no one else will. There's lots of good honest people in the business. National Geographic has never done wrong by me, neither has Golden Press. But when you are young you are ripe for the picking and there are plenty of wolves that will take advantage of you. There always have been and there always will be. You have to be willing to say no and stick to your guns. And you have to be ready to walk away with nothing. It's part of maturity and it's one thing that sets apart the men from the boys.

SKIN DIVER: What part does Idaz play in the business?

GREENBERG: She's totally involved. I don't make a move without her. There is no final word, we both agree on everything. Specifically, she has authored all our publications since the shark book and she did the artwork for our fishes and corals identification books and cards.

IDAZ GREENBERG: We have our individual areas of expertise but there are really no separate responsibilities. In the beginning Jerry did most of the layouts and now I do more. I have been a painter and a silversmith for years and I guess I am now a little better at handling the color separations. It's a funny thing but we got involved in this whole thing because it is what we do best. But the techniques were all self-learned and some of it I was a little bit better at than Jerry and vice versa. Fortunately one of us has always been able to master whatever techniques or materials were necessary.

SKIN DIVER: And if you disagree?

IDAZ GREENBERG: Then we continue our process of selection until we both agree. It works fine in our business and in our marriage as well.

SKIN DIVER: Do you think that it is somewhat ironic that your best selling book, *The Waterproof Guide to Corals & Fishes*, doesn't have a single underwater photograph?

IDAZ GREENBERG: No. And that's just the point. Artwork happens to work much better for fish and coral identification. It's whatever is best to get the job done. Sometimes it's photographs, sometimes art and sometimes words. If Jerry were egotistical about his photography he might not have been able to see that, but we both realized that artwork would be best.

SKIN DIVER: What do you have against awards?

GREENBERG: Do they make me a better photographer?

SKIN DIVER: No, but they honor your accomplishments.

GREENBERG: So what? If I can't take it to the bank or it doesn't make me a better photographer, what's the point? I can appreciate a compliment, but I can measure that in book sales. I don't need a trophy from a bunch of skin divers. I don't mean that I'm putting down the public, on the contrary, they are an important part of my business, but most people aren't aware of the intricacies of publishing or the quality of printing. I will accept a meaningful compliment from someone in the publishing field, such as David Douglas Duncan or Ian Ballantine or Bill Garrett from Geographic.

SKIN DIVER: What about public appearances?

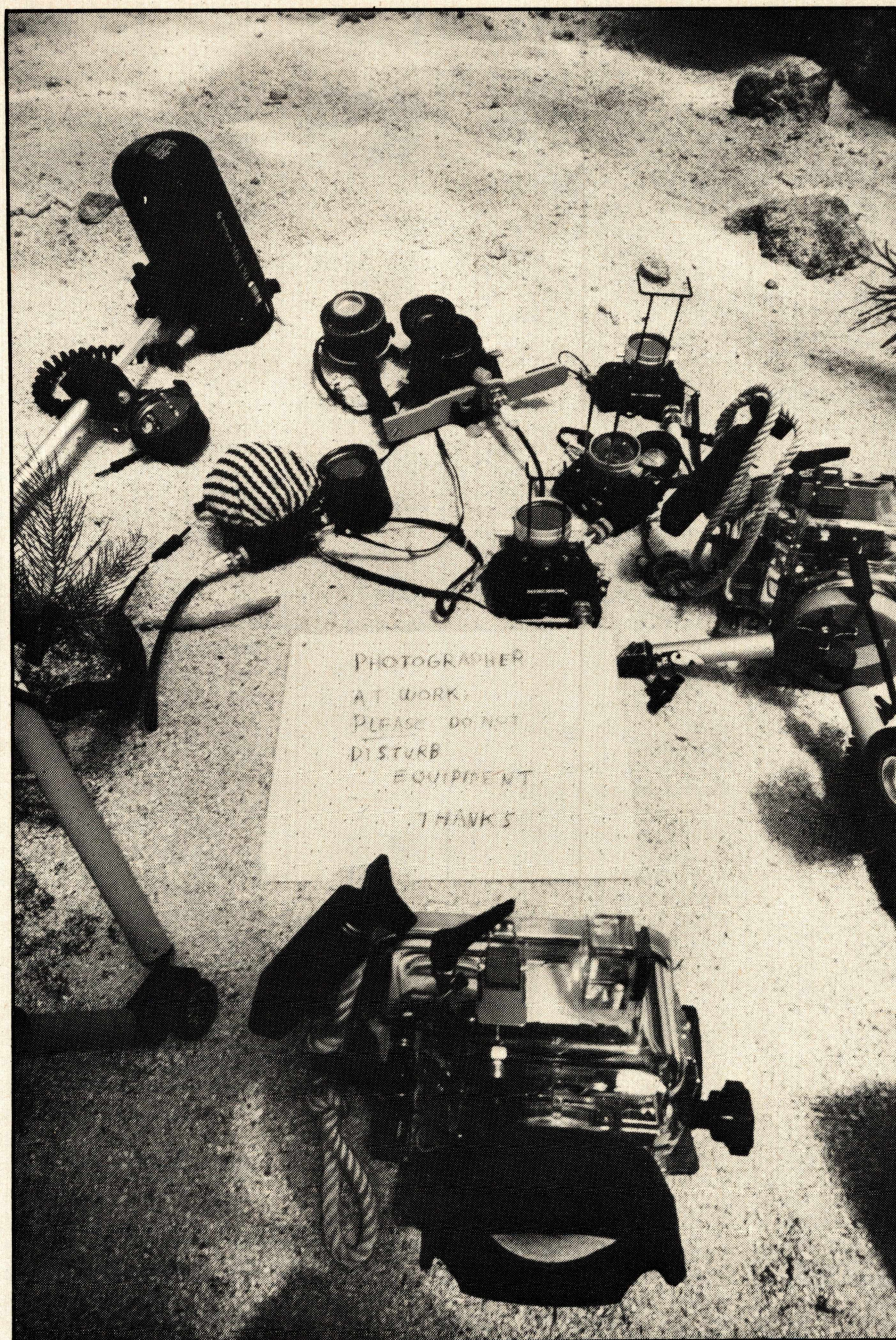
GREENBERG: I'm not in show business. I'm a photographer and a book publisher. Oh it's okay if you want to do it or the next guy. If you're good at it, fine. It's not that I couldn't do it, but if I agreed, it would take a lot of time to prepare to do a really good job. Actually I don't need it. I don't like crowds. I'm basically a hermit.

SKIN DIVER: What equipment do you use in the field?

GREENBERG: Without the right equipment you're dead, but equipment alone won't ensure success. I suppose I have more equipment than most underwater photographers.

SKIN DIVER: I'd say so. Counting your photo equipment, darkroom, boats, compressors, dive gear, etc., I'd say it's almost a quarter of a million dollar investment — is that right?

GREENBERG: That's close. And that's not all of it. It's expensive to be in the photography and publishing business. We usually have \$5,000 to \$10,000 invested in each book or project before the first



When Greenberg goes U/W, he is equipped for every type of photograph. Shown are Nikonos cameras with extension tubes and framers and wide-angle lenses, as well as housed cameras and strobes.

nickel comes back.

SKIN DIVER: What kind of equipment do you recommend for the serious amateur?

GREENBERG: Whatever works. For some that might be a Nikonos with a 28mm or a 15mm lens. For others it might be an SLR with a wide-angle or a macro lens in a housing. It depends on what kind of pictures you want to take. No single camera or lens will do it all; you have to decide what kind of image you want.

SKIN DIVER: What do you think about

the quality of most of the underwater photographs published today?

GREENBERG: There are lots of good close-ups, fish and coral photographs. Anyone with a macro tube or a close-up lens is potentially a fair marine life photographer. There is very little good wide-angle work. Five to seven feet away you begin to lose color — that can be handled by proper technique. But from a creative standpoint there is a lack of compelling, story-telling pictures. There are a

lot of good underwater photographers today but not that many great ones.

SKIN DIVER: Are there some underwater photographers who in your opinion are doing good work?

GREENBERG: Paul Tzimoulis is a very good photographer and publisher but don't tell him I said that. Geri Murphy is showing real promise. Jack McKenney is a good all around photographer. Bill Curtsinger is very talented. Doug Faulkner is a real artist — very good on marine life — and David Doubilet is really doing some fine work now. And, don't forget Bates Littlehale. You'll do well for yourself, that is if you need the compliment. Just don't start believing your own press clippings.

SKIN DIVER: How's the number one son doing?

GREENBERG: Michael has been contributing to our projects as a photographer for some time now. He's become very good with the Rolleimarin and some of his fish portraits are as good as any of mine. He's equipment crazy though and he can't make up his mind whether to be a photographer or cinematographer. You've got to concentrate on one thing at a time or you won't do anything well. You can't serve two masters at one time.

SKIN DIVER: Are there any shortcuts that you can offer to budding young photographers?

GREENBERG: There really aren't any shortcuts. It takes taste, talent, tenacity and a lot of good breaks. Good taste is necessary and most people just don't have it. They don't know how to edit. You have to be brutal. You've got to hate your stuff when it is time to edit and most photographers are in love with their stuff.

SKIN DIVER: How can you tell when you are becoming a good photographer?

GREENBERG: When you can get rid of your ego and evaluate honestly. After a while the pace is not so frantic. Over the years you begin to slow down, pay attention, and really see for the first time. Your head becomes an editing machine. You begin to know instinctively what will work and what won't. And you will know when you have it. You can feel it in your bones, see it in your mind's eye, know exactly what the camera is seeing and what it will look like on film.

SKIN DIVER: Is there anything else you would like to add?

GREENBERG: Just one thing. Leave me to my fishes and corals and go home and write a good article. And leave out everything that's not important or interesting. That's the one sin you cannot commit. Don't be boring. You can never, ever afford to bore your reader. It's the unpardonable sin. And (breaking into a smile) that kid, is the way it's done. 🐠

Shop and save the Honest Archie way!!!

Cousteau and Honest Archie have to be the two most talked about divers in the world. For over 27 years Archie has been supplying divers with the finest equipment at fantastic discount prices. This has built Central Skindivers into one of the largest and most reliable diving equipment distributors. Every year tens of thousands of satisfied divers are properly equipped and happy that they have spare cash left over thanks to Archie's low-profit, big-volume price structure. Thousands of these divers have received their "C" cards thru the finest certified Scuba instruction in Central's own indoor heated pool, where you can try your equipment before you buy.



STABILIZING B.C. Surrounds you with buoyancy. CO₂, oral & low pressure scuba inflation. Best kam-action bac-pac. **\$149.**



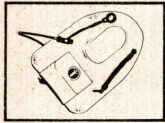
pressure dump valve, CO₂, etc. **\$129.**



pocket, long neck hose, etc. **\$169.**



DOUBLE BAG B.C. Famous buoyancy compensator with twin pockets. Overpressure-dump valve, CO₂ detonator, crotch strap, 40 pound lift, etc. **\$69.**



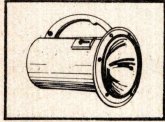
U.S.D. BC 700 New, 1980 Cordura B.C. Lever dump. 38gm CO₂. Low pressure scuba inflator. Whistle. In 52 or 38lb lift. **\$105.**



DACOR LIGHT. High intensity sealed beam. 50,000 initial C.P. Floats beam up. 6 Volt battery (not included). Good to 700 feet. Lasts 2½ hours. **\$26.**



RECHARGEABLE. Ocean Pro light rated #1. Super bright light for 3 hours. Complete with 110V. charger. 1 year guarantee. Dependable and terrific. **\$69.**



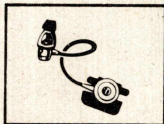
POWERFUL LIGHT. Good to 400ft. Rugged metal housing. 10 batteries (not included). Failsafe magnetic switch. **\$45.**



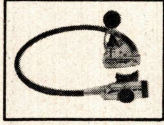
SEIKO WATCH. 17-jewel, self winding, auto date, amazing quality. Tested to 492 ft. One year guarantee. **\$139.**



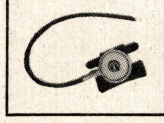
BOTTOM TIMER. Times dive precisely up to 60 minutes. Starts and stops automatically by water pressure. An important aid. **\$42.**



GREAT REGULATORS. Conshelf Supreme. Navy approved. Silicon enclosed 1st stage. **\$129.** Dacor Pacer 900 with "Venturamatic". **\$139.**



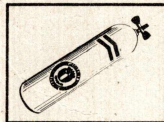
TEKNA PILOT. Newest technology for easiest breathing and minimum maintenance. Balanced piston, pilot second stage, 4 swivel ports, etc. **\$139.**



OCTOPUS. U.S. Divers second stage with longer hose. Fits any regulator. All metal construction withstands roughest use. Famous guarantee. **\$62.**



PRESSURE GAUGE. Famous make underwater pressure gauge. Fits all regulators. Luminous face, rubber cover, 1 year guarantee. **\$46.**



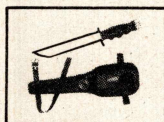
80 CU. FT. TANK. U.S. Divers Aluminum 80 J reserve with lifetime guarantee. Finest tank made. "Neutral buoyant". **\$129.** plus \$10. shipping.



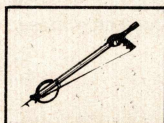
KAM BAC PAC. Deluxe pac complete with stainless steel band and rubber sleeve. Fits any size tank. All super-quick release. **\$36.**



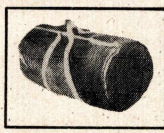
DACOR BLUNT TIP COMBO KNIFE. 2 saw-tooth areas on super-sharp smooth blade. Stainless. Rubber sheath. **\$32.**



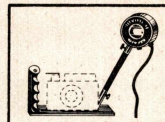
SWIMASTER. 7" stainless steel, lifetime guaranteed blade. Finest dive knife ever made. A working diver's tool, a sport diver's dream. **\$49.**



COMPETITION GUN. 36" overall. 2 slings, stainless steel shaft and parts, positive safety, automatic shock-line release. **\$44.**



GEAR BAG. Heavy duty neoprene bag. Full 30" by 15". Deluxe zipper, outside gun ties, inner pocket, reinforced handles, etc. **\$22.**



STROBE OUTFIT for Nikonos II or III. Strobe, arm, handle, tray, quick-trigger. Wide angle. Fast recycle. To 250 ft. Foam lined carry case. **\$269.**



FARALLON. Tri-vue mask with super comfort. Spring loaded adjustable strap. Minimum displacement with easiest equalizing nose pocket. **\$29.**



ROCKET FIN. Famous U.S. Divers adjustable strap fin. Super for the sport diver and a must for every Navy. Power with minimum effort. **\$22.**



COMPASS. Super-luminous Farallon oil filled compass. Giant direction arrow. Fantastic accuracy. Rubber comfort strap. **\$29.**



LUMINOUS COMBO GAUGE. 150ft or 250ft depth gauge and 4,000 psi tank pressure gauge. Fine precision instruments. **\$85.**



MAXI-DEPTH. Most fantastic oil filled 200 Ft. depth gauge with maximum depth indicator. Super accuracy with wider sweep in shallow range. **\$42.**



NYLON TWO SIDES ¼" SUIT. 5 zippers, stitched seams **\$129.** **NYLON TWO SIDES ¼" FARMER SUIT.** Double warmth. **\$149.**



BRUTE SUIT. ¼" nylon-2-sides suit with every deluxe feature and pockets, pads, whipstitching, farmer pants, velcro, etc. **\$189.**



Archie's
Discount
Catalog
50¢

CENTRAL SKINDIVERS

2608 Merrick Rd., Bellmore, N.Y. 11710

Phone: (516) 826-8888

Name _____

Address _____

City _____ Apt. _____

State _____ Zip _____

Phone () _____

Please rush attached order! Sorry NO C.O.D.

\$ _____ enclosed (N.Y. add tax)

or bill my charge card (Minimum order \$50.00)

_____ Exp. Date _____

☐ AM. EXP. ☐ VISA ☐ MASTER CHARGE

Signature _____

Central is a PADI 5-star and I.T.C. facility. Lessons for beginner through instructor.

Central Skindivers

2608 Merrick Road, Bellmore, N.Y. 11710 • (516) 826-8888 • Open 7 days.
160-09 Jamaica Avenue, Jamaica, N.Y. 11432 • (212) 739-5772 • Open 6 days

Minutes from Manhattan and Kennedy Airport.

Underwater life support systems are potentially dangerous to a non-trained user. Phone or mail order purchases of Scuba Tanks, Regulators or Buoyancy Compensators must include instructor's name and number or a copy of your certification. This ad does not constitute an offer to sell these items via mail order.



MEDIFACTS

(Continued from Page 65)

toms appeared, he did in fact detect numerous bubbles.

Question: Staying within the no-decompression limits, is it more dangerous to make a lot of short dives than a few long ones?

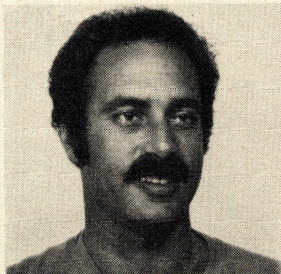
Answer: Not according to Haldanian theory, but newer information says yes, it is. That's because each ascent produces bubbles. These bubbles are very stable and don't go away for a long time. A lot of short dives means a lot of ascents, and the bubbles add up.

Question: Is a 10 ft. safety stop at the end of a dive a good idea?

Answer: Definitely. Time spent at anywhere between 10 and 20 feet will reduce the danger of bends following a dive approaching the no-decompression limits. It has been argued that this isn't necessarily so, since further in-gassing may occur at those depths, increasing the total body burden of nitrogen. The argument is specious, since a diver fully saturated at 20 feet can ascend directly to the surface without risk. Consider a dive to 110 feet for 15 minutes. A full legal limit of nitrogen is aboard, but because of the short bottom time most of it is in the fast tissues and very little in the slow tissues. Surfacing directly invites bubbles in the fast tissues. A stop at 10 to 20 feet permits some of the excess dissolved nitrogen to diffuse out into the alveoli, and some to diffuse into the near-empty slow tissues. The high partial pressure of nitrogen in the fast tissues is greatly reduced, and with it the tendency to bubble. 

NEW DIVE BONAIRE INSTRUCTOR

The owners of Dive Bonaire at the Flamingo Beach Hotel, Bonaire, Netherlands Antilles, announced that Mark Schwartz has recently joined their operation. Schwartz, a native of Los Angeles,



has been sport diving more than 10 years and is a CPR, CMAS, PADI and NASDS instructor.

Before joining Dive Bonaire, Schwartz was a dive guide at the Maya Beach Resort in Belize and the aquatics manager at Winding Bay in Eleuthera, Bahamas. In Bonaire, Schwartz will be responsible for resort and certification courses. 

WHAT YOU SEE HAS NEVER BEEN SEEN BEFORE.

Introducing Eumig Nautica, the world's first self-contained underwater Super 8 movie camera. It dives down to 130 ft. without a housing, makes great movies both in and out of the water.

Imagine...now you can film your undersea world in all its excitement and beauty, even if you've never used a movie camera. For Nautica is even easier to use than most ordinary Super 8 cameras. Exposure is fully automatic, and the unique Eumig Servofocus system keeps the lens in sharp focus from 39 inches to infinity. You just aim and shoot!

You can also shoot dramatic closeups, and a Panoramic Macro Aspheric (PMA) lens attachment included with the camera gives you undistorted ultra-wide-angle scenes in and out of the water, with a field of view three times wider than that afforded by a normal lens.

The camera's wrist strap is also a macro measuring gauge, and a depth gauge is built-in (but it doesn't replace your own safety gauge).

Nautica. Underwater, or at home, it's at home. It's the first Super 8, the only Super 8, made just for you. It's at your Eumig dealer.

Eumig Nautica. At home anywhere.

eumig

EUMIG

QUALITY IN MOTION

Eumig (U.S.A.) Inc., Lake Success Business Park, 225 Community Drive, Great Neck, New York 11020.



DIVE ALL DAY WITH SUPER SNORKEL



Enjoy real diving freedom with an unlimited air supply! It's compact and lightweight. You can take it to your favorite dive spots.

See your dealer or:

INNOVATIVE DESIGNS INC.
1870 Oak Creek Dr., Dunedin, FL 33528
(813) 784-5349

**YES I WANT THE
WHOLE STORY ABOUT
COMMERCIAL DIVING**

**Commercial
Diving
Institute**

151-19 6th RD./WHITESTONE, N.Y. 11357

Please send me complete FREE information package on careers in commercial diving. (or call (212) 767-7800)

NAME _____

STREET _____

CITY _____

STATE _____

ZIP _____



CONCH REEF

FOR CONTRAST

and the interesting contrast varies from
Fish behavior patterns to drop-off walls
packed with hundreds of lobster By Bill Barada

Conch is a gorgeous little reef, less than the size of the average city block, but a dive in this area is educational as well as enjoyable. The reef is located in the Upper Florida Keys just outside the boundary of Pennekamp Park, about six miles southwest of Molasses Reef and six miles offshore the town of Tavernier. Conch is easy to find because some of its corals are in such shallow water they create a navigation hazard, and so are marked by a big, red nun buoy with number six painted on it.

The contrast between diving on Conch and diving in Pennekamp is so great that Bill Crawford, owner of the Tropic Isle Dive Shop in Key Largo, calls Conch his "change-of-pace" dive. Bill says that after three or four days

of Pennekamp diving most of his customers are ready to try something new, and Conch diving is so unusual that most are elated by the experience.

Among the little reef's special attractions are magnificent strands of pillar corals, some of which have spires more than 10 feet tall. This species is relatively rare in Florida's waters because it brought a high price when commercial coral collecting was legal. Only a few isolated stands are now left. The beauty of the pillar corals on Conch is accentuated by ugly scars which remain where former colonies once grew. But the scars are healing and the remaining corals are healthy and beautiful.

Conch Reef also provides an opportunity for deeper diving than that usually available in Pennekamp. About 600 to 700 yards south of the nun buoy is a wall, or drop-off, that begins at a depth of 45 feet



photograph by Paul J. Tzimoulis

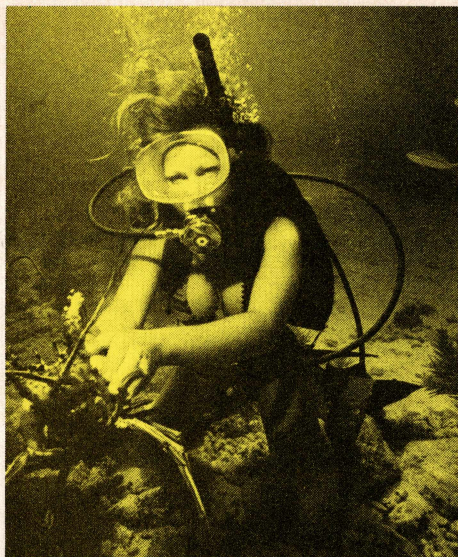
Some of the reef's sponges are huge. Good Time Charlie takes divers to Conch.

and slants downward at an angle of about 45 degrees to a sandy floor at 115 feet. The wall extends for about half a mile and its face is broken by ragged fissures, crevices and caves which provide homes for a wild assortment of marine life. Divers probing these crevices may encounter reef fish, lobsters and crabs, big loggerhead turtles, nurse sharks, grouper and snapper. The smoother face of the wall is decorated with both soft and hard corals, including some magnificent basket sponges so large an adult scuba diver can hide inside.

At the bottom of the wall where the coral meets the sandy sea floor, are cracks and crevices bristling with hundreds of lobster antennae. The col-

Just outside Pennekamp, Conch offers a home for an assortment of marine life.

PHOTOGRAPHY BY BILL CRAWFORD



CONCH REEF



Bill Crawford photographed his wife Linda in the process of lobster stalking at Conch Reef, just outside of Pennekamp Park, Florida. The reef is famous for its abundant supply of bugs. Right, Linda knows the best spot for bugs is in and around areas with ragged fissures, crevices and caves.

onies migrate to deeper water at certain times of the year. The crawfish inside some of the crevices are stacked on top of each other as thick as ants in a nest.

According to Bill Crawford, many of the people who dive Pennekamp regularly have never dived in any other ocean waters. Their experience is limited to the shallow reefs of the park where water depths usually do not exceed 35 to 40 feet and decompression is of no concern. Crawford points out that a dive to 115 feet on the Conch Reef wall, where bottom time and decompression limits must be considered, is a new and exciting experience. He also claims that many people who have never dived deeper than 30 or 40 feet are a little shaky about going to depths of more than 100 feet and they must be checked out first in shallow water to see how they react. This

is also true for the occasional diver who only gets into the water two or three times a year and may need a practice session, and for new divers who have never been underwater in the ocean.

The divers Crawford takes to Conch Reef are carefully selected from groups he has observed in Pennekamp. Most other park dive guides follow a similar policy, so Conch divers are given an opportunity to compare the beauty of the shallow reefs in a protected marine sanctuary with the thrill of a deep water dive along the wall of an unprotected area. For many Pennekamp divers the major attraction of Conch Reef is the contrast between the behavior of the wild fish on a reef where spearfishing is permitted with the behavior of tame fish in Pennekamp where spearfishing is prohibited. The different reactions of these fish to the pres-

ence of humans is striking.

This is particularly true of popular Pennekamp spots such as Molasses and French reefs where hand feeding fish has become a routine practice. On these reefs divers are greeted by swarms of fish that crowd around begging for hand-outs. But on Conch Reef, the fish retain their instinctive caution and stay a safe distance from divers. As Bill Crawford says, "the sound of a scuba regulator can be interpreted by reef fish as either a dinner bell or a danger signal, depending upon the conditioning of the fish populations." Thus, Conch Reef provides a rare opportunity to compare two types of fish behavior because both Pennekamp and Conch reefs may be dived on the very same day.

Such comparisons are important to divers because an understanding of the

effects of human activities on fish behavior is basic to intelligent management of our marine resources. This is especially true now that a number of federal agencies such as the National Oceanic and Atmospheric Administration (NOAA), and the Fishery Management Councils (FMCs) are planning the establishment of more marine sanctuaries.

Regulations should be determined on the basis of objective, scientific studies, not the emotional arguments of spearfishing advocates or foes. Both divers and scientists interested in studying fish must carefully consider the effects of any conditioning the animals may have experienced before they attempt to draw any conclusions.

As an example, comparing the behavior of fish in a marine aquarium, such as Marineland, with that of fish in the open sea makes about as much sense as com-

have an even larger capacity. These divers are encouraged to take bait along with them to feed the fish. The demand is so great that special, prepackaged fish-food can be purchased from Key Largo shops and markets. The most popular foods for fish-feeding are hot dogs, raw shrimp, squid and small pieces of fish. According to Crawford, the fish love hot dogs and many prefer them to the natural foods they usually consume.

As a result, the resident fish populations of Pennekamp reefs have lost all fear of humans. They not only respond to the sound of a scuba regulator as a dinner bell, they also respond to the sound of an anchor hitting the water and gather beneath the boat in anticipation of a free meal. Divers dropping into the water in these areas find that hundreds, sometimes thousands, of fish crowd around the diver in competition for bait. Some of

than on popular Pennekamp reefs and groups aboard a charter boat often have the entire reef to themselves. Crawford's Conch trips are limited to 20 people and their first dive is made in deep water along the wall, so the remaining bottom time can be spent in shallow water on the little coral reef without worrying about decompression. Visibility usually exceeds 100 feet, and divers at the top of the wall can see all the way to the sandy sea floor on the bottom.

Divers at the bottom of the Conch Reef wall can often look up toward the surface and watch game fish such as amberjack, jack crevalle and pompano feeding on huge schools of baitfish that swirl above their heads. The schools of bait consist of thousands, perhaps millions, of tiny fish swimming close together in formation. If divers sit quietly, the clouds of tiny fast-moving fish often swirl close above their heads. When attacked by a large predator, the school explodes in pandemonium. At times the feeding predators may be graceful eagle rays, giant loggerhead turtles or even a large grouper, treating spectators to a scene of breath-taking action and beauty.

Bill Crawford encourages his Conch Reef customers to take along fish foods, especially hot dogs, and try their hand feeding wary fish so they can compare the reactions to Pennekamp fish. Divers quickly learn that patience is a primary requirement for fish feeding, as it is for fish hunting and fish photography, when dealing with wary, wild specimens. The trick is to sit perfectly still and let the curious fish come to you. Any attempt to chase the fish, or any quick movement, will frighten a wary creature. Some people seem to possess a sort of fish charisma that lets them approach, feed, and even pet wary, wild fish that might shy away from other divers. But, regardless of their success or failure at feeding the fish on Conch Reef, the Pennekamp divers who visit this area are virtually unanimous in their enthusiasm about their particular experience.

An interesting sidelight is that many people whose ocean diving is limited to protected areas such as Pennekamp, believe that the behavior of fish populations in these areas is normal and that the fish on all reefs react to humans in the same manner. On the other hand, underwater hunters who visit only those reefs where spearfishing is permitted are convinced that the behavior of fish on these reefs is normal. Obviously, the truth is that both types of fish behavior are abnormal, and are the result of human conditioning. But whether the results are good or bad can only be determined by an in-depth, objective scientific study. In the meantime we suggest divers interested in the different fish behavior patterns try Conch Reef for contrast. >



During the daytime, bugs may be found in holes with only their antennae projecting beyond the opening. The juvenile bug, right, is better left behind for the following year's vacationers.

paring the behavior of animals in a zoo with that of animals in the wild. The reactions of Marineland fish are influenced by captivity and thus completely different from the reactions of fish in a natural environment. The captive fish are protected from the elements, do not have to forage or compete for food, and have become so accustomed to the presence of humans that divers entering the tank are either ignored, or are pestered by swarms of pet fish begging for handouts.

To a certain extent the same thing is happening in marine sanctuaries such as Pennekamp Park, especially in areas where hand feeding fish is a routine practice. Hundreds of divers hit the Molasses and French reefs almost every day during the summer season. Crawford's boat, the *Good Time Charlie*, can haul 38 divers and other Pennekamp dive boats

these fish have even developed cute tricks such as nuzzling a diver or trying to wriggle beneath his life vest in order to attract attention or win affection and obtain a larger share of the food.

Thus, fish populations protected from spearfishing in a marine sanctuary such as Pennekamp Park can be conditioned to react to the presence of humans in much the same manner as the animals protected from hunters in Yosemite or Yellowstone. And when they are handled by humans they behave the same as captive animals in a children's petting zoo. In contrast, the fish populations on unprotected reefs where spearfishing is permitted, are conditioned to react to humans in much the same way that wild animals react in a forest where hunting is permitted—they are cautious.

The diver traffic on Conch is far less

DIVEMASTER®

Rugged, Reliable, Digital- Like no other dive watch

The DIVEMASTER® is tested to 750 feet, has a bright L.E.D. display and features a unique lifetime battery system. You never change batteries! The batteries are recharged by solar cells built into the face of the watch*. The DIVEMASTER® is programmed for adjustment-free operation to the year 2100 and accurate to within 8 secs. per year. The entire system is permanently sealed in a virtually unbreakable Lexan® module.

Brushed Stainless Steel—sugg. retail \$129.95
Black Finish—sugg. retail \$159.95

LOOK FOR OUR DISPLAY AT YOUR DIVE SHOP
OR FOR FREE BROCHURE AND NEAREST DIVEMASTER
DEALER CALL TOLL FREE (800) 645-7253 (In N.Y. (516) 433-6411)



337 W. JOHN ST.
HICKSVILLE, NY. 11801
(516) 433-6411

*Batteries will function for appx. one yr. of use without exposure to light.



Made in USA
Simulated Display

ABALONE SHELL CLEANING

BY DR. SAMUEL MILLER

One of the most rewarding activities in diving is the cleaning of abalone shells. Although unknown to many, the procedure for cleaning shells is fast, simple and can be accomplished with a minimum of effort and tools.

The basic cleaning kit consists of the following items: hammer, chisel, wire brush, box of paraffin, small metal pan, small paint brush, one gallon of muriatic acid (pool acid), two large plastic containers, one pair rubber gloves, one large stew pot and a bottle of baby oil.

Experience gained through years of trial and error reveals the best species for cleaning are the red, pink and Sorenson abalones. These species have consistently given excellent results. If possible, avoid the blacks or greens; the blacks become pitted and the greens' shells are stratified and tend to have soft spots and crumble.

Regardless of the species chosen, it is recommended only healthy shells relatively free of marine growth be used. After the specimens have been selected, the following procedures should be followed for the best results.

Using a hammer or hammer and chisel (an abalone iron also makes a good chisel) remove all large marine growths such as barnacles and tube worms. Wire brush the exterior, and remove the remaining growth. Wash the shells, removing all traces of meat and as much of the remaining external growth as possible. Dry the shells completely.

Using a paint brush, thoroughly coat the interior of the shell with paraffin. Note: The paraffin protects the surface of the shell from the acid; therefore, the shell must be completely dry, otherwise the paraffin will not adhere to the shell's surface. Put on rubber gloves and other protective clothing. Since acid will be used, it is *strongly recommended* that eye protection also be worn — a dive mask with the purge valve removed makes an excellent eye protector. Place two large plastic containers side by side; in one pour about three inches of muriatic acid, fill the other with fresh water. Place prepared shells in the acid, exterior down. Check occasionally by removing shell and rinsing in fresh water. When the exterior has attained the desired degree of cleanliness, remove it from the acid, rinse in fresh water and wash under running water. Place completed shells in a large stew pot, fill with fresh water. Place pot on stove and bring to boil. Set it aside, allow it to cool. Then skim solidified paraffin off the top of the water and remove shells. Finish the shell with a hand rubbed coat of baby oil. Periodically recoat with baby oil to renew luster.

Want to be a Professional Diver? Get off to the right start!

Your diver training now is of crucial
importance to your future success.

At PROFESSIONAL DIVING SCHOOL of N.Y. we have a world of international underwater contracting experience that spans 29 years, including 40 countries, for you to learn from.

Our teaching staff is made up of working divers and supervisors who have devoted their professional lives to the proposition that diving can and shall be a challenging and safe career.

Diving is also an exacting, high pressure, and expanding career. Make no mistake about that. That's why PROFESSIONAL DIVING SCHOOL of N.Y. is located in New York City, the largest maritime commercial center in the world.

Approved for training of veterans by the New York State Education Department.
Member of the Association of Commercial Diving Educators Inc.

We would like to discuss career opportunities with advanced sports divers considering commercial diver training. Our course offers:

NAVY DEEP SEA DIVING DRESS (MARK V)
SHALLOW WATER (DESCO, SCUBA) BAND
MASKS, KMB, GAS HATS, MIXED GAS,
DIVING BELLS, CUTTING & WELDING,
SALVAGE, COMMUNICATIONS, PHOTO-
GRAPHY, TENDING & JOB PROCEDURES,
SEAMANSHIP, OFFSHORE OIL RIG WORK,
MODERN THEORY, & MEDICAL
ASPECTS OF DIVING.

Professional Diving School of New York

wholly owned subsidiary of
INTERNATIONAL UNDERWATER CONTRACTORS

222 Fordham Street, N.Y. 10464/212 885-0600.
Please send me your complete catalog / curriculum and school decal.
(Out-of-state residents enclose \$2.00 to cover postage & handling)

name _____

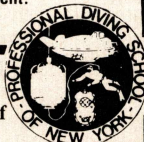
street _____

city _____

state _____

zip _____

Licensed by The New York State Educational Department



SDM travel

SECTION

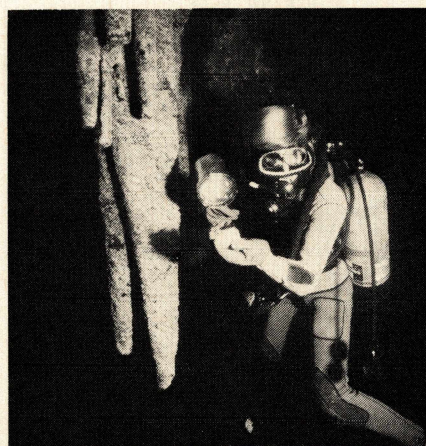
S snorkeling with full cave diving gear in the warm tropical sun is hard work, but my discomfort turned to dismay when Glenn Taylor and Didi Nilson, my dive buddies, stopped to hover over a dark V-shaped hole in the ocean bottom ten feet below. Pointing, I stared at Glenn, my eyes round with astonishment — eyes that could only have asked, “You mean we’re going in *there*?” Glenn cheerfully nodded his head and dived down to the opening to see if the current had slackened. He flashed us an okay sign which meant it was time to go in. Finally, after a week of intensive preparation, I was ready for my first cave dive. As I exhaled and sank to the bottom, I couldn’t help thinking about the blue hole’s name and hope that its proximity to the shoreline Bahamian graveyard was the only reason it was called Cemetery Cave.

We ducked under the ledge and swam into the V. It seemed as though our primary lights had failed as the intense mid-day sun wiped out our night vision. However, when my eyes adjusted to the lower light levels, I could see that the opening looked like a flattened tube, barely three feet in height and about ten feet wide. The mouth of the cave was clogged with yellow striped grunts and angelfish darting back and forth in alarm at our intrusion. Pale pink and white hydroids covered the floor near the opening, and only after brushing my unprotected hands against them did I realize that they packed the standard coelenterate weaponry, stinging nematocysts. Once we were through the entrance, the passage opened up to a diameter of about ten feet and we tied off our guide line. With the surface illumination fading away behind us, I felt isolated from the outside world, traveling in a fragile envelope of light through an ancient catacomb which had never seen the sun.

The cave system seemed to have its own marine community, oblivious to the outside world. The walls were stuccoed with gray and white chicken-liver

CEMETERY CAVE: A TRIP INTO NATURE’S MARINE CATACOMBS

BY BRUCE NYDEN



Top, Glenn Taylor studies some of the rare stalagmites inside Cemetery Cave. Didi Nilson inspects a conical shaped aggregate of stalactites.

sponges, some of them hanging like taffy from the limestone canopy and others connected from floor to ceiling with delicate threads made out of living sponge. Several species of shrimp darted through the tunnels of luminescence created by our lights and then disappeared into the darkness. At every corner spiny lobsters were out in force. What seemed like hundreds of green eyes twinkled eerily in the darkness as our lights swept around the passage. The lobsters were everywhere — virtually wall-to-wall in the

myriad crevices and cracks lining the corridor. I’d heard stories about one of them — a large old sentry that patrolled the cave and supposedly chased divers. “The Guardian,” as he was called, was said to have front legs as long as a man’s arm and weighed a good 15 pounds.

As we passed the 500 foot mark of lateral penetration, cave formations began to appear. Stalactites, stalagmites, and columns that had glistened with dripping water during the last ice age were now completely submerged and discolored with the grayish-white of encrusting sponge. At 600 feet, the passageway narrowed. Up until now our depth gauges had been reading an average of 30 feet and there had been no branching tunnels to get lost in. Glenn glided down the narrow tube ahead of us and I followed with Didi close at my heels. For approximately 30 feet, my doubles banged and scraped the sides and ceiling as I inched along. Suddenly I realized we were no longer confined by limestone walls and thought once again that our dive lights had failed us. Soon I realized that the blackness in which we found ourselves resulted from the absence of anything which could have reflected our light. The giant chamber into which we emerged registered 15 feet on my gauge at the top and 120 feet at the floor; its length was nearly 100 feet. Hanging from the ceiling was a large disconnected column too big to put my arms around and at least four times as tall as I am. Its base showed where an earlier cave floor had been torn away in an ancient cataclysm.

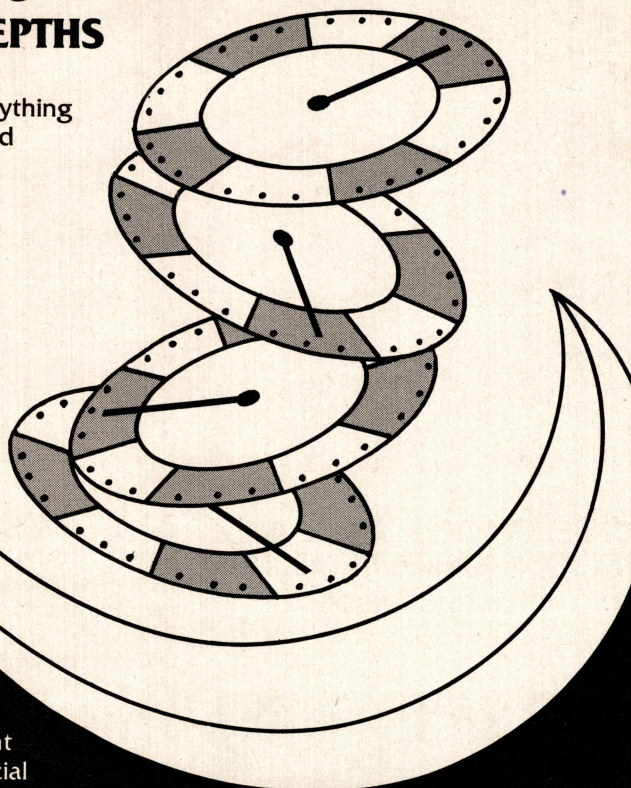
Glenn flickered his light in front of me and motioned me over to compare air gauges. We had used nearly a third of the air supply in our double 72’s, and it was now time to turn around and retrace our route with the aid of the safety line.

The trip out was much siltier than the trip in because our bubbles had dislodged the sediment from the ceiling. The blue hole current had reversed and was now blowing us out of the hole. As

(Continued on Page 83)

WE GO TO GREAT DEPTHS

to tell you everything
you ever wanted
to know about
depth gauges.



reviews 53 different
gauges in our special
12 page equipment
section in the
April issue

"TIMESHARING" VACATION DIVE PLAN ON A LUXURY SAILING YACHT

Dive Cayman, Cosumel, Virgin Islands, Florida Keys and Bahamas. Live aboard in your own private stateroom and enjoy all the fun and convenience of your own yacht with none of the worries of maintenance or hotel reservations.

A NEW CONCEPT IN DIVE VACATIONS . . .

GUARANTEE FUTURE DIVE VACATIONS AT TODAY'S COST. Beat inflation and the increasing cost of hotel rooms; the expense of owning a vacation home or yacht. THERE'S A BETTER WAY . . . a simple, thrifty plan that assures dive vacations for years to come at today's prices! That new way is TIMESHARING VACATIONS DIVE PLAN MEMBERSHIP.

TIME SHARING MEMBERSHIP . . .

lets you choose the time period you want, and you buy the time period you need each year for years to come. Your vacations will be pre-paid at 1980 prices. YOU'RE FREE TO CHANGE BOTH LOCATION AND TIME. The beauty of Vacation Dive Plan Membership is the flexibility; you are never "locked in":

- *you can trade at other resorts
- *you can sell unused weeks
- *you can rent out your time
- *you can will your time to your spouse

. . . PLUS: since it only costs a couple thousand, you are not draining all your savings in this investment, but yet, in essence, YOU OWN A LUXURY YACHT!

YES! I'm interested in "Timesharing Vacation Dive Plan". Send further information to:

Name

Address

City State Zip

Mail this coupon to:

VACATION DIVE PLAN
3427 Cullen Lake Shore Drive,
Orlando, Florida 32812

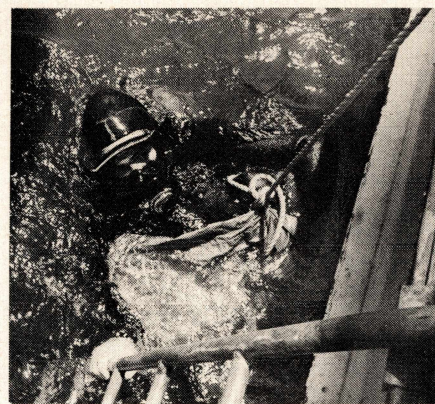
Wreck of the Georgeanna

Relics recovered from Civil
War blockade runner

By Kevin Rooney

On the evening of March 19, 1863 a sleek steamer raced her way toward the city of Charleston, blocked from the world by union warships. Captain Davidson made one last check to see that all lights were out. Then the ship moved through the mist into the blockade off Charleston harbor.

As the blockade runner *Georgeanna* turned her clipper bow towards the Isle of Palms near the harbor's entrance, a cannon shot shattered the night's stillness. The *U.S.S. America* had sighted the dark profile of the blockade runner as



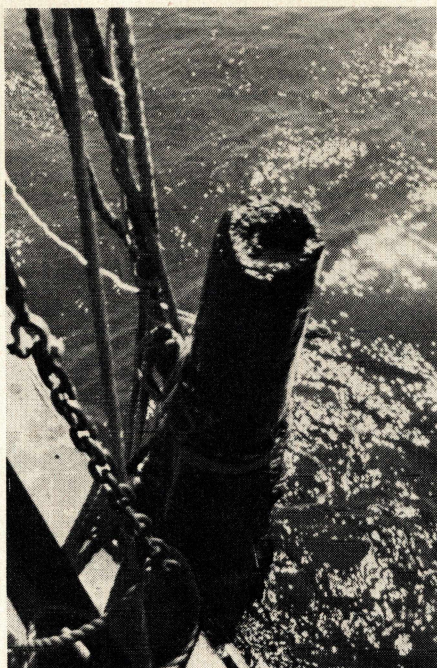
photograph by Kevin Rooney

it attempted to slip past. This mobilized the warships and instantly they gave chase to the fleeing *Georgeanna*. The pursuing *U.S.S. Wissahickon*, which had been on station at nearby Rattlesnake Shoals, fired into the darkness; the shell hit home. The *Georgeanna* shuddered under the impact as the shell smashed into her stern. The captain elected to do what so many other commanders had done in this dangerous but lucrative trade: he would run his ship aground. Minutes later the *Georgeanna* laid hard aground off the Isle of Palms. But before hurrying over to the side of the stricken vessel to the safety of Confederate shores, the Captain had the pipes cut, flooding the ship's cargo holds. Then he set the ship afire and escaped.

The loss of the *Georgeanna* was a devastating blow to the South. Like so many other blockade runners slipping into Charleston under the cover of fog and darkness, the *Georgeanna* gave her

owners a profitable return, greatly aiding the South's war effort. The *Georgeanna's* mission into Charleston was to have been two-fold; after discharging cargo on the docks of the city, she would emerge from within the harbor and face the Union blockade. This time not as an illicit cargo carrier but as a Confederate cruiser. This would have been devastating for the Northern Merchant Marine. Already a few rebel cruisers were ravaging the marine community and causing panic.

The *Georgeanna* was the third cruiser expressly built to serve the South. The man responsible for its construction was Captain James Bulloch, whose effort gave the South its most effective commerce raiders, the *Alabama* and the *Sherandoah*. The Confederates looked to Europe for their warships, and the English were the primary suppliers. The Foreign Enlistment Act prevented English subjects from providing arms or munitions to the Confederates, forcing Bulloch into cloak and dagger maneuvers. These tactics were necessary as he waited for his ships to reach the safety of the open sea, where they mounted their guns while the ship was formally commissioned into the Confederate Navy.

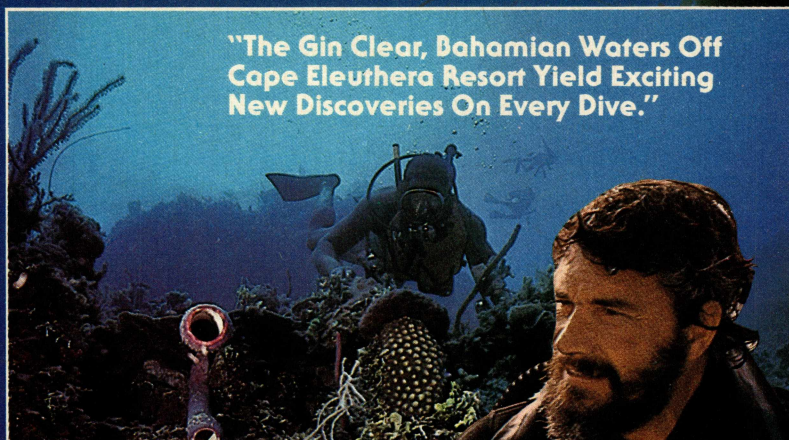


Long before the *Georgeanna* slipped from the ways at Brikenhead, England, union agents pondered her legality. She was a lengthy brig rigged steamer of 580 tons, heavily built to withstand the recoil of her 14 gun battery. She sailed from Liverpool on January 12, 1863. Captain Bulloch looked on as the most powerful ship he had built slipped from view, little realizing that his prize would end up beached off the South Carolina coast.

No serious salvage efforts were made by the Confederates or the Union Navy following the loss of the *Georgeanna*. Had the ship been wrecked near an area

(Continued on Page 86)

"The Gin Clear, Bahamian Waters Off Cape Eleuthera Resort Yield Exciting New Discoveries On Every Dive."



— Bob Wallace, internationally known underwater explorer, photographer and lecturer

Bob Wallace is typical of the serious divers who keep coming back to Cape Eleuthera. Here, in his own words, is why, after nearly 100 undersea adventures on our reefs, he still considers them to be an exciting challenge.

"On my wide ranging photographic assignments, I have logged hundreds of hours at diving resorts throughout the world. Frankly, none can compare with Cape Eleuthera for the quality of topside facilities and services and the amazing variety of marine life and diving and underwater photographic opportunities directly offshore.

"Whether you're snorkeling in a cove where the conchs are as thick as cobblestones, or gliding through a staghorn jungle in 30' of incredibly clear water, or hovering over the rim of the awesome Eleuthera wall, Cape Eleuthera will be a place that lures you back again and again. For divers especially, one of their ads says it best. 'You'll know how much you loved Cape Eleuthera when it breaks your heart to leave.'"

For reservations and information about our dive packages call Cape Eleuthera toll-free at:

1-800-432-8251 inside Florida.

1-800-327-8776 outside Florida.

1-813-542-3191 after 5 PM and weekends.

Or send this coupon to:



**CAPE
ELEUTHERA**
BAHAMAS

Cape Eleuthera is served by Bahamasair, Mackey and Trans-Island Airlines.

Cape Eleuthera
% P.O. Box 528500
Miami, Florida 33152

SK

Name _____

Address _____

City _____

State _____ Zip _____

United States Virgin Islands



Photo: Bret Gilliam, V.I. Divers, Ltd.

Beyond the blue horizon.

Diving by day, place-hopping by night. And well-organized dive centers on all 3 islands. Write directly to those listed for details in their area. For a copy of our 28-page Dive Guide to the Virgin Islands, write to the Division of Tourism at the address below.

St. Croix:

Above & Below, 12 Strand Street, Frederiksted 00840. Tel.: (809) 772-3701
Caribbean Sea Adventures, Kings Wharf, Christiansted 00820. Tel.: (809) 773-6011
North Star Dive Tours, Box 3461, Christiansted 00820. Tel.: (809) 778-2125

Pressure Ltd., Box 3612, Christiansted 00820. Tel.: (809) 77-DIVER
Salty Dogs Inc., 59 Kings Wharf, Christiansted 00820. Tel.: (809) 773-2678

V.I. Divers, Ltd., PanAm Pavilion, Christiansted 00820. Tel.: (809) 773-6045

St. John: (Zip Code 00830)

Scuba Ventures, Caneel Bay Plantation, Tel.: (809) 776-6111

St. John Watersports, Box 70, Cruz Bay, Tel.: (809) 776-6256

St. Thomas: (Zip Code 00801)

Aqua Action Inc., Wintberg Peak, Tel.: (809) 775-3275

Bolongo Bay Beach & Dive Club, Box 3381, Tel.: (809) 775-1800

Caribbean Divers, Red Hook, Tel.: (809) 775-1935

Ocean Adventures, at Bolongo Bay, Box 7337, Tel.: (809) 775-2710

St. Thomas Diving Club, Box 4976, Tel.: (809) 774-1376

Virgin Islands Diving School, Box 9707, Tel.: (809) 774-8687

Joe Vogel Diving Company, Box 7322, Tel.: (809) 774-2321

Watersports Center, Box 2432, Tel.: (809) 775-0755

United States Virgin Islands

St. Croix • St. John • St. Thomas

©1980 United States Virgin Islands Division of Tourism, 10 Rockefeller Plaza, New York, New York 10020.

CEMETERY CAVE

(Continued from Page 79)

we got closer and closer to the entrance, the increasing current made it more difficult to keep from banging into the walls, and I had to use my hands to buffer the blows and to control my speed.

It wasn't long before a faint sliver of daylight became visible and I felt as though I was making a transition from this bizarre marine mausoleum back into the real world. I wasn't ready to leave, but I had to be content with the knowledge that I would be back again sometime.

Cemetery Cave is a fairly easy dive by cave diving standards, but specialized equipment and training are still required. Double cylinders are used with long-hosed octopus regulators. Full wetsuits are a must even in 80 degree water to keep from sinking to the bottom under the extra weight of the double tanks. Buoyancy compensators are modified to keep the diver in trim and to prevent fin thrusts from stirring up the sandy bottom. Three light sources are required for each diver and a set of reels carrying the exploratory line is a necessity for survival.

Cemetery is an ocean blue hole and, like others of its type, has a reversing current. Grand Bahama is permeated with a network of caves, and because of the island's unusual underwater topography, there is a delay between the peak tides of the north shore and those of the south. This causes water to flow through the subterranean aquifers in one direction when the tides are rising and in another when they are falling. The velocity of these currents is strong and limits the diving at slack current to approximately one hour. When the tides are mid-cycle and the blue holes are at full sucking velocity, there are vortexes seen over the opening much like those formed when you pull the plug out of a bathtub. At full blow there is a standing lens of water over the hole, and it's one of the few places in the world where you can practice swimming uphill.

Cave divers at the Underwater Explorer's Society (UNEXSO) in Freeport have developed a special set of tables that take into account these tidal delays and are able to predict the slack currents to within five or ten minutes. This means that if the dive is planned properly and the cave is entered just before it begins to excurrent, the current will point the way out at the end of the dive.

At present Cemetery Cave is relatively unexplored and only a dozen people have visited it. Most of those were cave diving students or advanced diving students with UNEXSO. I have been back to Cemetery Cave a number of times since I completed my National Association of Cave Divers cave course. It always is an adventure with wonders in store.

LONG ISLAND, BAHAMAS

STELLA MARIS INN INTRODUCES



THE DIVER'S TRIANGLE

THREE ISLANDS FOR THE PRICE OF ONE!

1. Stella Maris/Long Island High coral heads & shallow reefs. Grouper feedings. Beach diving & snorkeling. Drop-offs & coral caves. 2. Conception Island Virgin wall diving. Mystery shipwreck. Coral barrier reef. 3. Rum Cay Exotic drop-off diving. British battleship wreck. Big fish action.

FULL WEEK SCUBA PACKAGE

\$402 WITH ALL DIVING INCLUDED

Res. & speedy confirmation, see your Travel Agent or call Toll-Free 800-327-0787, Fl. 800-432-5594, Miami 443-3821. Represented by Robert Reid Assoc. Toll-Free 800-223-6510, N.Y. 212-757-2444, Toronto 416-921-3161. For FREE brochure write: Jorg Friese, Stella Maris Inn, P.O. Box 105, Long Island, Bahamas. Dial Direct 809-336-2106.

FOR MORE FUN AND MORE DIVING
JOIN US ABOARD THE

M/V IMPOSSIBLE DREAM

AIR CONDITIONED

75 X 23 U.S.C.G.

APPROVED DIVEBOAT
CRUISING THE BAHAMAS

3 1/2 • 4 1/2 • 5 1/2 • 6 1/2 DAY TRIPS

UNDER \$65.00 PER DAY

INCL. 3 MEALS DAILY

AND UNLIMITED AIR FILLS

FOR FURTHER INFORMATION
AND CURRENT PRICES
SEAVENTURES INTL. INC.

P.O. BOX 3271

INDIALANTIC, FL 32903

305/723-9312

ENJOY UNDERWATER PHOTOGRAPHY with JIM & CATHY CHURCH

at SPANISH BAY REEF RESORT, GRAND CAYMAN

Two pros to help you personally underwater.

3 six-day courses:
Feb. 13-March 10, 1980
10 five-day courses:
June 29-Sept. 27, 1980



... courses run by Jim and Cathy ... continue to receive high marks from students.

UNDERCURRENTS, V III, #12

Your course must be THE most fun way to get a blast of serious U/W photo input. Outstanding! Bob Whittlesey

I learned more in that week than I had in the last five years. Dick Portmann

I cannot express how much I enjoyed myself. The slide show I did for my friends was a tremendous success. Chris Mills

Both of you were terrific. I had an absolute ball. Maurice Levy

I'll be back. Stan Botwinik

For details, write: Jim & Cathy Church
P.O. Box 80, Gilroy, CA 95020
or phone: (408) 842-9682

715 Florida Avenue South • Minneapolis, Minnesota 55426 • (612) 544-7168



The best darn diving vacations you can find

are found at Go Diving, Inc. For smooth running tours, fun-filled destinations and reasonable prices to areas like:

COZUMEL ROATAN
BELIZE GUANAJA V. ISLANDS

CONTACT Go Diving, Inc. for further information and free brochures

We care.

715 Florida Avenue South
Minneapolis, Minnesota 55426
(612) 544-7168

DIVE HONDURAS

Spyglass Hill

RESORT & CLUB
ROATAN, ISLA DE LA BAHIA
REPUBLIC OF HONDURAS, C.A.



Picture a modern, elegant resort set in a 30-acre botanical garden—and smack in the middle of a 32-mile-long barrier reef. That's SPYGLASS—alone in its class.

Guests and members keep coming back, because it's nice to have two dives a day, meals, fresh-water pool, boats and guides—all at such reasonable rates. And fewer insects than you can imagine possible in the tropics!

Take the recommendations of Columbus, Morgan and Barbarossa. They loved it—for the same reasons you will! Nothing has changed much since the island flag was the "Jolly Roger."

For information & reservations
wire or write to above address or

SPYGLASS HILL RESORT

c/o ROSEO AFFILIATES
U.S.A. 630 N. Western
Address Lake Forest, Illinois 60045
Telephone: (312) 234-2222

Still Settling for 2nd Best?

Maybe it's time you moved up to See & Sea. For fifteen years we've offered the MOST diving, the BEST diving, and the LOWEST COST PER DIVE. Our programs are designed for the avid diver/photographer who insists upon maximizing his diving and photo opportunities. Join us in Cayman, Philippines, Roatan, Galapagos, Belize, Red Sea, Palau, Australia, Fiji, New Zealand, Micronesia and Maldives/Sri Lanka.



680 BEACH ST. SUITE 340 WHARF SIDE
SAN FRANCISCO CALIFORNIA 94109
TELEPHONE (415) 771-0077
TELEX 278036 SEAS UR

TRAVEL
SERVICE,
INC.

Why Not The Best?

PARADISE FOUND
A REMOTE TROPICAL HIDEAWAY
Snorkeling, Sailing,
Diving, Fishing, and
Boat Excursions
REEF HOUSE RESORT
Famous for Clear Waters
Coral Reefs, Sunken Pirate Wrecks,
and Gourmet Dining
ROATAN • BAY ISLANDS • HONDURAS
1-800-535-2587

BAHAMAS
LIVE ABOARD DIVE BOAT
Unlimited Diving Meals
Walls and Wrecks Air
SEA FEVER DIVING CRUISES
P.O. Box 1335 Key Largo, Fla. 33037

ANTHONY'S KEY RESORT
ROATAN HONDURAS
"A CARIBBEAN PARADISE"
● Unlimited diving ● No Serv. Charges
● Horseback riding ● Private bath
● Sailing ● All meals
● Tennis ● Group rates
Make 1980 reservations NOW
Box 31696, SF, CA 94131 (415) 333-6426

DIVE THE BAHAMAS
FOR THE FUN OF IT
—75' Dive Ship —Air-conditioned cabins
—3 meals Daily —Free Air,
—Groups or Individuals Varieties of Diving
M/V IMPOSSIBLE DREAM
U.S.C.G. Approved S.O.L.A.S. Certificated
P.O. Box 1262 • Melbourne, FL 32901

DIVE THE WORLD'S 2ND LARGEST BARRIER REEF ONLY 2 HRS. FROM NEW ORLEANS OR MIAMI

CORAL BEACH HOTELS & DIVE CLUB, LTD.
AMBERGRIS CAYE, BELIZE, C.A.

COMPLETE DIVE PACKAGES INCLUDE: *HOTEL ACCOM. *2 DIVES A DAY *3 MEALS A DAY *ALL TRANSFERS 4 DAYS \$225. 7 DAYS \$360.

BAREFOOT CARIBBEAN ISLAND.
WALLS, CANYONS, CORAL GARDENS, GIN-CLEAR WATER

FOR BROCHURE AND
INFORMATION CONTACT:



*PER PERSON
DBL. OCCUP.
AIR TO BELIZE
NOT INCLUDED

GROUP
PRICES
TOO!

DIVE BONAIRE N.V.
Owned and operated by Peter & Alice Hughes. Located at the lovely FLAMINGO BEACH HOTEL. Scuba or snorkel 365 days. Modern, comfortable facilities include new Van, Boats, and Compressors. Expert instruction. Write: DIVE BONAIRE N.V.
P.O. Box 686
Ithaca, N.Y. 14850
(800) 252-6323 NY only, (800) 847-7198 all other states

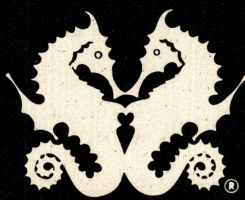
TRADITION IN SAIL A diving adventure in the Caribbean. From Big French Cay and the 112' ketch "Heddy"; Snorkel, scuba, seamanship training, crafts-marine biology, small boat building and Red Cross classes PLUS. A Coed camp for 13-18. **TRADITION IN SAIL**, Box 6098, San Diego, CA 92106 (714) 291-5993 (305) 426-1145

Grand Cayman Spanish Bay Villas
Luxury one or two-bedroom apartments with full privileges at Spanish Bay Reef Diver's Resort next door.
Write Air Mail To:
Spanish Bay Villas
Box 1200 B, Grand Cayman, B.W.I.

MIDTOWN GUEST HOUSE
Centrally located
Convenient transportation to skin-diving
sites 10-20 minutes from guest house
Rates: Single Double
Summer: \$15-18 \$23-25
Winter: \$20-22 \$25-30
2 nights deposit required
Midtown Guest House • 1-B Commandant Gade
St. Thomas, Virgin Islands 00801 • (809) 774-6677 or 774-9157

Dive Cayman

Live aboard the 85-foot "Cayman Diver," the best equipped diving cruiser in the Caribbean: air conditioned quarters, gourmet meals. Exotic diving on virgin reefs; photographer's paradise, night diving. Scheduled 7-day diving cruises every month. Exclusive group charters available.



**See
&
Sea**

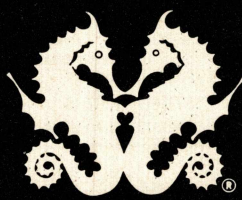
680 BEACH ST./SUITE 340/WHARF SIDE
SAN FRANCISCO, CALIFORNIA 94109
TELEPHONE (415) 771-0077

TRAVEL
SERVICE,
INC.

Why Not The Best?

Philippines

Live aboard the magnificent 102 foot "Sea Quest." Exotic diving on remote and primitive offshore islands. Superb food, photographer's dream, the world's richest marine life. Scheduled 17 day cruises. Exclusive group charters available.



**See
&
Sea**

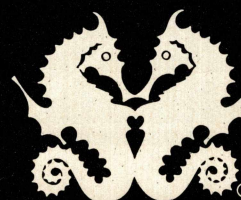
680 BEACH ST./SUITE 340/WHARF SIDE
SAN FRANCISCO, CALIFORNIA 94109
TELEPHONE (415) 771-0077

TRAVEL
SERVICE,
INC.

Why Not The Best?

THE RED SEA

Dive the fabulous Sinai reefs. Incredible tropical fish, stupendous walls, amphorae, soft corals. Comfortable hotels, superb dive boat. This is the only 3-4 tank per day program in the region. Special group dates available.



**See
&
Sea**

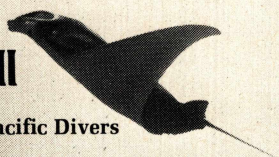
680 BEACH ST. SUITE 340 WHARF SIDE
SAN FRANCISCO, CALIFORNIA 94109
TELEPHONE (415) 771-0077
TELEX 278036 SEAS UR

TRAVEL
SERVICE,
INC.

Lowest Cost Per Dive

HAWAII

with
Central Pacific Divers



Superb Diving
5 Islands

Hawaii's Finest

Dive Boats

Professional
Guides

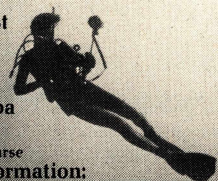
Complete Scuba
Certification

5 Day Ocean Course

for Diving Information:

Central Pacific Divers

780 Front St., Lahaina, Maui, HI 96761 (808) 661-8718



Try
the best known
sail and dive cruise
in the Virgin Islands
Trimaran

MISTY LAW

Our years of successful operation have resulted in heavy bookings far in advance from past guests and their friends.

Inquire NOW for the best deal going!

Only \$74 per day

Includes everything-even the bar and wine is free!

Individuals or groups up to 8 in 2 bed cabins, each with private bathroom

Write for details

TRIMARINE BOAT CO LTD.

HOMEPORT ST THOMAS U.S.V.I. 00801

or phone (809) 774-5630

Gone Down Lately

AT PENNEKAMP?

Dive aboard 48'

GOOD TIME CHARLIE

... We carry O₂ For your safety

... Open Water Checkouts

Keys Largest U/W CAMERA RENTALS

**NIKONOS
REPAIR
CENTER**

Write for Color Brochures

BILL CRAWFORD'S

TROPIC ISLE DIVE SHOP

P.O. Box 755-B Key Largo, FL. 33037
Mile 103.5 Tel. 305-451-1063

Cayman Diving Lodge

GRAND CAYMAN ISLAND B.W.I.



- COMPLETE DIVING RESORT
- DAILY EXCITING DIVE TRIPS
- DIVE THE CAYMAN WALL
- VIRGIN REEFS, CAVES
- SHIPWRECKS
- RELAXED ATMOSPHERE
- RESTAURANT AND BAR
- DIVE SHOP
- RENTAL EQUIPMENT
- DIVING INSTRUCTIONS
- THREE DIVE BOATS
- IDEAL FOR GROUPS AND INDIVIDUALS
- PROFESSIONAL U.W. FILM & TV PRODUCTION SERVICE & FACILITIES

Dive packages from
\$315.00 a week

For Information & Reservation:

**AIRTOUR
UNIVERSAL**

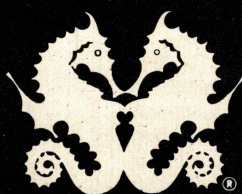
241 East Commercial Boulevard
Fort Lauderdale, Florida 33334

(305) 491-0333

In Fla 1-800-432-8894

ROATAN

Live aboard the majestic 112 foot traditional sailing vessel Heddy. Unparalleled comfort, fine food, unlimited diving. Six day program. Exclusive group charters available.



**See
&
Sea**

680 BEACH ST. SUITE 340 WHARF SIDE
SAN FRANCISCO, CALIFORNIA 94109
TELEPHONE (415) 771-0077
TELEX 278036 SEAS UR

TRAVEL
SERVICE,
INC.

Why Not The Best?

DIVE THE EXUMA CAYS THE BEST OF THE BAHAMAS

—71' Diving Yacht

—Unlimited Diving

—Wall Dives

—Night Dives

—Free Air

—Excellent Food

—Economical Price

—Groups Only

R/V DRAGON LADY 800 S.E. 17th St.
Ft. Lauderdale, Fla. 33316

Out Island Inn & Pieces Of Eight

Two exceptional hotels await you at George Town, Great Exuma, a fairy tale island where you can roam the beaches year 'round and never roam the same beach twice. The Out Island Inn features 88 waterfront rooms, a gourmet restaurant and adjoining lounge with nightly entertainment. The Pieces Of Eight has 32 completely refurbished rooms on a hillside overlooking the harbour. Your stay is enhanced by exchanged dining privileges and such amenities as scuba diving, snorkeling, fishing, sailing, tennis (with pro and pro shop) volleyball, shuffleboard and backgammon. There is also a gift shop, barber shop, beauty salon, straw market, bank, babysitters, rental cars and scooters, and bicycles. Plus a lovely fresh water pool and 800 feet of sandy beach to wander free as you please. Discover the Out Island Inn and the Pieces Of Eight before everyone else does—you know how that can be.

For reservations call toll free:
In U.S. (800) 327-0787
In Florida (800) 432-5594
For free brochure write:
P.O. Box 49, George Town,
Exuma, Bahamas.

DIVE BONAIRE Flamingo Beach Hotel

Caribbean Dutch West Indies

- * Air Cond. Rooms
- * Private Baths
- * Swimming Pool
- * U/W Photo Rentals
- * Sailing & Fishing
- * Group Rates
- * Shopping
- * Entertainment

DIVE & SEEK TOURS
PO Box 31696, SF, CA 94131 (415) 333-6426

EXPEDITION

to remote tropical islands.

6 or 14 days from \$350.

Write for free Adventure Booklet.
Box 120, Dept. 120 Miami Beach, Fla. 33139

**Windjammer
Barefoot Cruises**



DIVING STUDY TOURS TO
MICRONESIA, HAWAII & CARIBBEAN

STUDY MARINE ANIMALS WHILE HAVING THE DIVES OF YOUR LIFE

• WRITE TO
EO-U-DIVE, Inc.
 P.O. BOX 25513, HONO, HI. 96825
 P.O. BOX 724, LIBBY, MT. 59923
 (406)293-6244

BELIZE Central America
 Virgin diving on a Caribbean coral atoll
 10 DAYS
\$475
 ALL INCL.

Shorter packages available for groups of 16 to 27

PRIVATE CABIN ON THE BEACH OVERLOOKING THE REEF, ALL MEALS, TANK, AIR, BOATS, GUIDES, 8 full days of diving.

For literature write AIR MAIL to
LOMONT ENTERPRISES,
 Ltd., Box 563, Belize City, BELIZE, C.A. phone 2548.

THE GEORGEANNA

(Continued from Page 81)

important to the harbor navigation, steps would have been taken to salvage her and remove her hulk from the navigation channels. The remaining wooden parts of the deck and superstructure drifted ashore as numerous storms and hurricanes tore at the vessel's iron hull, buckling and collapsing her sides. By the early 20th Century, her existence was known only to a few fishermen.

The wreck, however, was of considerable interest to a young diver named Lee Spence. He had been researching the *Georgeanna*. After several years he consulted the many area shrimpers as to the whereabouts of wrecks off the Isle of Palms, where he surmised the wreck of

DIVE BARBADOS

SCUBA SAFARI

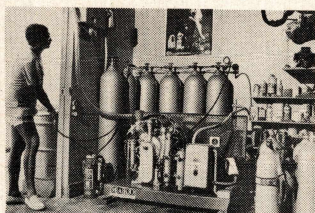
SCUBA SAFARI



Skin Diver publisher Paul Tzimoulis (left) prepares to dive "Stavronikita" with Scuba Safari proprietor Hasshim Degia and other enthusiasts.



Scuba Safari offers a full range of water sports for the Barbados visitor.



Mako compressor is typical of well-maintained, up-to-date equipment.

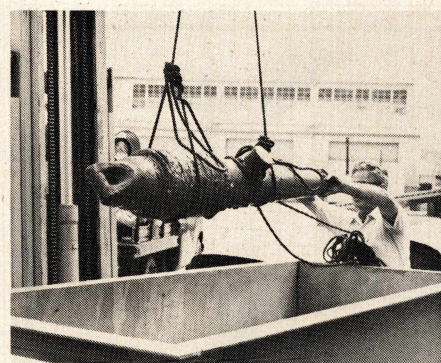
Scuba Safari proprietor Hasshim Degia offers to his clients Certified Dive Masters, a well-equipped shop strategically located within walking distance of major hotels, the very finest equipment and trained staff, full equipment rental and a variety of exciting dive sites nearby, including the 356-ft. wreck, "Stavronikita", coral reefs and drop-offs. Numerous programs make for the perfect dive adventure holiday. You can count on Scuba Safari for safety, courtesy, friendly service and reliability.

Barbados has crystal clear, year-round-warm water and beautiful climate. And there are plenty of other diversions on the English-speaking island: duty-free shopping, a full range of water sports, attractions, dining, sightseeing and stimulating night life, for apres dive.

SCUBA SAFARI

Hilton Drive/St. Michael, Barbados, West Indies
 Phone (overseas direct) 809-426-0621

In USA, call or write Caribbean Adventure Travel Association
 for information/bookings on Scuba Safari packages
 1443 S. Orlando Ave./Maitland, FL 32751/Phone 305-645-1332 or 628-5152



photograph courtesy U.S. Army, Fort Jackson Museum

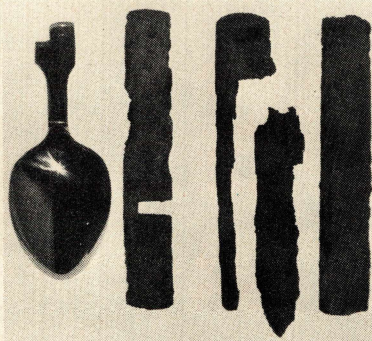
the *Georgeanna* lay. It did not take long to find out there were several wrecks off the South Carolina coast, including one very large one in his proposed search area. Spence then enlisted the aid of shrimper Wally Shaffer, who agreed to take him to that certain location. The two left Shem Creek in Mount Pleasant in Shaffer's boat and in less than one hour's ride they were on the site.

The wreck lay in 20 feet of water at high tide. As Spence swam over the jumbled wreckage, fringed with a vast array of snagged nets filled with decaying fish, he saw what he thought might be a cannon, but upon investigation he discovered it was several hundred blue feather edged dinner plates. He then began fanning the mud and sand blanketing portions of the hull, and discovered a small wooden barrel. Pulling off one of the staves, he reached inside and began lifting out blue and red handpainted cups and bowls. Other crates and boxes were discovered stacked with their dunnage still in position. In some areas, sections of the *Georgeanna's* hull extended over nine feet of the ocean floor. This prevented cargo from moving from its original placement in the compartment.

During the first seasons of the excavation most of the cargo recovered from the wreck was of mercantile nature. The only finds which had a direct connection to the war in the field were rubberized Army tarps and surgical instruments.

Spence knew that the ship was carrying cannons, among them two very rare Whitworths, an example of the first successful breech loaders used in modern warfare. Two divers named Jim Batey and Drew Ruddy searched for the wreck's elusive cannons while working under contract for Shipwrecks Incorporated, but were unable to devote their full time to the effort. Among the best finds of these salvors were two brass telescopes, a box of platinum studded false teeth and glass containers of mercury.

The whereabouts of the *Georgeanna*'s cannons remained a mystery until spring of 1974. The discovery took place in a section of the wreckage that Spence had named the ledge. It was in this area, about midship, that the inward bound blockade runner *Mary Bowers* from Nassau plowed into the iron fangs of the *Georgeanna*. Today, portions of the *Mary*



photograph by Val Gurno

Bowers cover a massive area in the aft section of the forward cargo hold; locking in what Spence estimates to be several hundred tons of cargo. In order to retrieve this cargo, it was necessary to excavate the hull of the *Mary Bowers*. On the edge of the ledge, several boxes of bottles and crockery were discovered. It was while searching in this area that Spence located exploding projectiles, discovered by seeing a brass fuse protruding from a mass of cannon shells.

One of the first artifacts recovered during the search under the hull of the *Mary Bowers* was a large brass hoop shaped object later identified as a gunsight. The fact that it was covered with coral and sea worms meant that it had fallen from overhead. Going to the area where the gunsight was discovered, Spence inched his way far up under the wreckage. He found a long, irregular shaped object which was fused to the underside of the *Mary Bowers* and wedged in position by a fallen deck girder from the *Georgeanna*. He examined it and found that the object was the encrusted remains of two of the missing cannons.

The cannons were salvaged sometime afterward, and are undergoing preservation treatment for future display at Fort Jackson, South Carolina. Spence is not working the *Georgeanna* at this time, but recently discovered a cargo manifest for the *Georgeanna* and believes that the best finds are yet to come.

DIVE THE GEM!

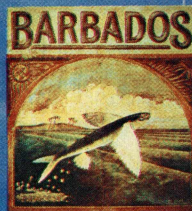


You know the pleasures of the depths. Peaceful, dark, silent... and challenging, for mind and body. But have you ever dived a sunken ship? (If you have, we don't have to sell you. You'll be back as soon as you can get back.)

It's the ultimate diving experience. All the delights of the incredible Caribbean reefs are at your disposal. And they're at your doorstep, not hours away. To give you some idea how serious we are about creating a diver's paradise, we even sank a ship (S.S. Stavronikita), the largest one ever sunk for this purpose, to form a safe and fascinating artificial reef.



For après dive, or for your non-diving friend, we have plenty of unspoiled, uncrowded beaches. And entertainment abounds in our festive, friendly atmosphere. It's all you could hope for. And it's all on our gem of an island... Barbados.



Barbados Gem of the Caribbean

For complete information on Barbados Diving vacations, contact:
Barbados Tourism & Trade Centre
199 S. Knowles Ave./Winter Park, Florida 32789/Tel. (305) 645-4145

Diver's Communication Center in Barbados

THE DIVE SHOP LTD.

Sales • Rental • Diving Trips
Fishing and Sailing Charters
P.O. Box 44B, St. Michael, Barbados
Ph: 60888, Ext. 298 or 62031 (eves.)

INTERNATIONAL REGULATOR REPAIRS

FAST 3 DAY SERVICE
Single Hose \$9.95 + Parts
Dealer & Instructor Rates Available
Returned C.O.D. by U.P.S.
ANCHOR INTERNATIONAL, INC.
315 W. Ogden Ave., Westmont, Ill. 60559

WE DARE YOU TO COMPARE DIVE BIMINI BAHAMAS

2 days/1 night — \$165 — 5 dives
3 days/2 nights — \$225 — 8 dives
4 days/3 nights — \$280 — 11 dives
5 days/4 nights — \$335 — 14 dives
6 days/5 nights — \$390 — 17 dives
7 days/6 nights — \$445 — 20 dives
8 days/7 nights — \$495 — 23 dives

Specializing in COMPLETE wholesale dive packages • 2 dive boats • 2 compressors • 80 tanks • Package incl: Airfare from Ft. Lauderdale, FL; ground transportation; room; all meals/gratuities; 3 dives per day incl. day of arrival & departure • Night dives, wall dives, wreck dives. Contact: NEAL WATSON'S BIMINI UNDERSEA ADVENTURES, P.O. Box 4960, Ft. Lauderdale, FL 33338 • Phone (305) 763-2188

GROUP RATES AVAILABLE

One-quarter mile off the western shore of Barbados there lies a most extraordinary reef. Shrouded in a living canopy of silvery bait-fish, this massive formation has become a happy haven for marine life of all kinds. It is a towering giant of a reef which begins on a sandy bottom at 130 feet and rises almost vertically some 50 feet or more. It is immense in size, measuring over 350 feet in length, and is topped by two slender spirals whose pointed branches almost break the surface above. Deep within the very core of this reef there is a maze of twisting passages and huge caverns which could hide the very largest of fish. Standing silent

but not unnoticed, the big reef has become a beacon to all forms of undersea life including divers. Yet the strangest part of this reef is the fact that it is made of steel: It is an artificial reef, the wreck of the freighter *Stavronikita*.

Few shipwrecks have provided the kind of opportunity that can change the destiny of an island. Like something out of the Twilight Zone, the *Stavronikita* appeared at precisely the right moment in this island's 350 year history to participate in a novel experiment.

In the summer of 1976, the *Stavronikita*, a Greek freighter, was making its way across the Atlantic from Ireland to the Caribbean. She was carrying 101,000 bags of cement. Early one morning a

fiercely burning fire engulfed the superstructure of this vessel, causing the untimely death of six crewmen. The ship drifted helplessly for four days before the remaining 24 sailors were rescued. Eventually, the derelict vessel was towed some 200 miles to Barbados.

For over a year the burnt-out hulk of the *Stavronikita* remained anchored at Barbados, while lawyers and insurance agents struggled over her final disposition. The vessel was eventually purchased by the Barbados government for the nominal sum of \$30,000. A group of visionary divers, environmentalists and government officials had devised a unique plan for the *Stavro*. Rather than let this freighter be cut apart for scrap metal,

BARBADOS

and the STAVRONIKITA

the wreck that made a dive resort

By Paul J. Tzimoulis



Above, Willie Hassel plays with one of the wreck's many baby lobsters. Right, SOS painted on *Stavro*'s decks and sides amidship by stranded crew; pulley block atop forward mast rigging is overgrown with marine life. Far right, diver approaches forward mast.

photograph by Gert Murphy

photographs by Paul J. Tzimoulis



they proposed to sink her as an artificial reef and underwater playground for scuba divers. The dive operators of Barbados needed a major underwater attraction to lure vacationing divers. While the coral reefs of Barbados are quite beautiful, they offer nothing unusual or different from the rest of the West Indies. Barbados needed something special and the *Stavro* was it!

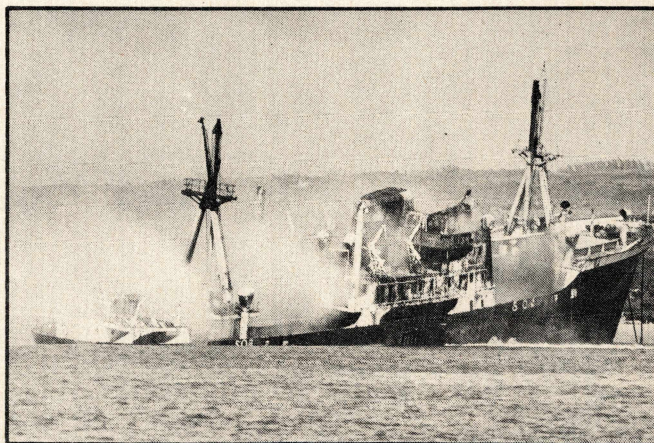
The Greek freighter was first stripped of salvageable materials, including a few winches and other machinery which had not been damaged by the fire. Next, 70,000 gallons of oil were removed from the ship's fuel tanks to prevent marine contamination of the reef environment. The ship was then towed to a position midway along the west shore of Barbados, where the waters are calm and clear and hotels line the white sandy beaches. Using 200 pounds of explosives, a U.S. Navy demolition crew sank the vessel in 130 feet of water at approximately noon, November 21, 1978. Barbados now had



The *Stavronikita*, a Greek freighter gutted by fire, was purposely sunk one-quarter mile off the western shore of Barbados in 1978. Marine growth is beginning to obscure the ship's name.



A U.S. Navy demolition crew used 200 lbs. of explosives to sink the ship.



The Greek freighter had already been stripped of salvageable materials.

a shipwreck of which it could be proud.

It has been a little more than one year since the sinking, and already the *Stavro* has become a marine ecosystem of its own. The 356 foot freighter sits upright on a sandy bottom, with its bow resting in 120 feet of water and the stern settled in 130 feet. A large school of silver-sided anchovies swarm around the ship's mast and superstructure like migrating birds. Predator jacks and barracudas swoop in on the schooling fish for an occasional meal. Tucked away in the crevices and shadowy corners are invertebrates.

One of the busiest areas of the wreck is the forward mast, which comes within 10 feet of the surface. At the very top are featherduster worms growing in the grooves of the pulley block and tucked in the narrow crevices between the ship's rigging. At a depth of 40 feet, the mast crosstree provides a marvelous spawning area for

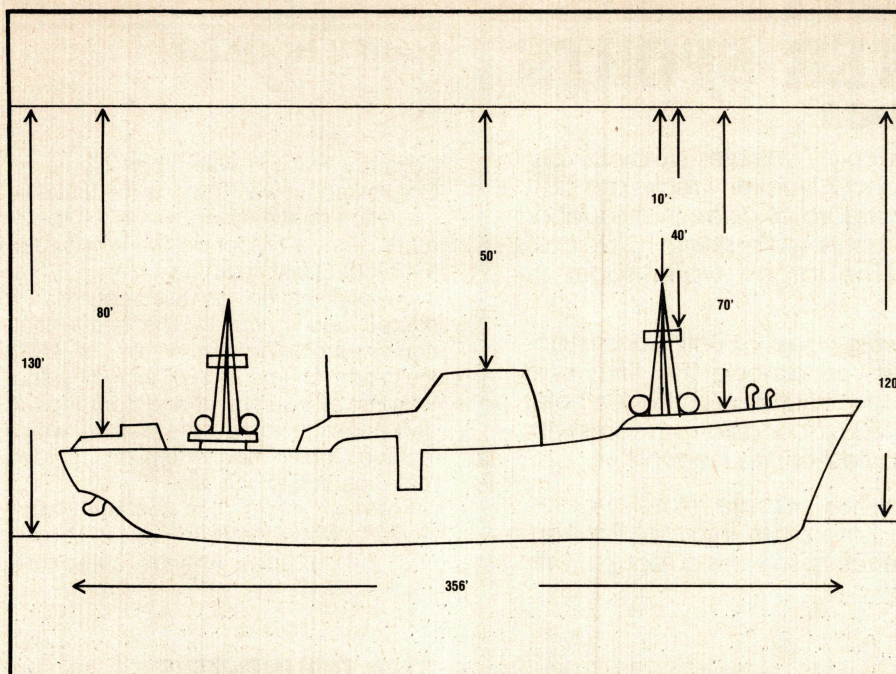
all types of small crustaceans. There is a large colony of banded coral shrimp which lives among this upper rigging and spends the day foraging for food which drifts by on the ocean current. Intermingled with the banded coral shrimp are quite a number of arrowcrabs, some of them the size of a soccer ball. Tucked away in the loudspeaker and other machinery are six or seven baby lobsters. Also growing on the mast are several lovely black and yellow crinoids. Because of the marine life, a number of tropical reef fish have also moved in on the wreck, including parrotfish, butterflyfish, and angelfish.

From a diver's point of view, the *Stavro* is the kind of wreck everyone imagines. The ship is immense in size: the equivalent of a 35 story skyscraper resting on its side. It is fully intact, with bow anchors and chains stretching out toward the

sandy bottom below. She rests on her keel almost perfectly upright, as though engaged on an endless journey across the ocean floor. The superstructure is a honeycomb of windows, doorways, passageways and small compartments — all inviting exploration.

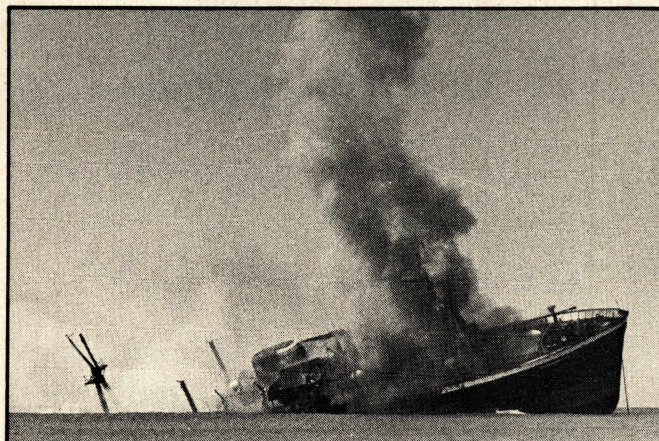
The name *Stavronikita* can still be seen on the bow of this great ship. The letters are almost three feet tall and still white. Also recognizable are the SOS symbols which the crew painted on the ship's decks and sides amidship. Everything is still intact — cables, pulley blocks, mast riggings, stairways, stack and railings. The ship is preserved for eternity and its appearance is reminiscent of the great wrecks which lie at the bottom of Truk Lagoon. While this can vary considerably, it is not unusual to find 100 foot visibility during a typical dive.

Barbados is fortunate enough to have

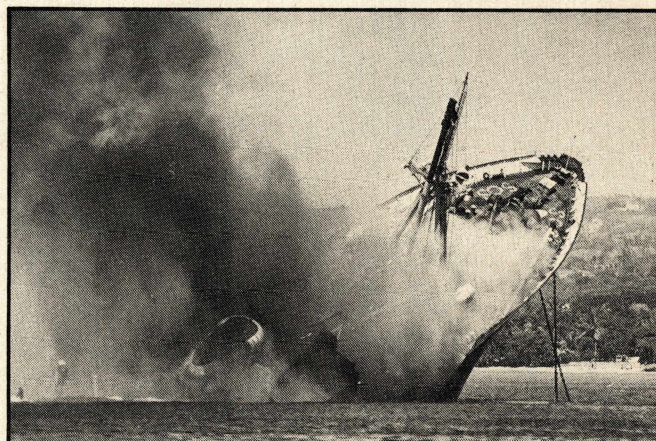


BARBADOS DIVE OPERATORS

Scuba Safari
Hilton Drive, St. Michael
Barbados, West Indies
Phone: 60621
Hashim Degia, Owner/Manager
The Dive Shop Limited
P.O. Box 44B
Holiday Inn, St. Michael
Barbados, West Indies
Phone: 60888, Ext. 298
Paki Degia, Owner/Manager
Les Wotton Watersports
Coral Reef Club Hotel, St. James
Barbados, West Indies
Phone: 23215
Les Wotton, Owner/Manager
Willie Watersports
Paradise Beach Hotel
Black Rock, St. Michael
Phone: 03151
Willie Hassel, Owner/Manager
Barbados Board of Tourism
800 Second Avenue
New York, New York
Phone: (212) 986-6516
Markly Wilson, Manager



The *Stavronikita*, on its way to becoming a U/W playground for divers.



The *Stavro's* bow rests in 120 feet of water, the stern settled in 130 feet.

several excellent dive operators who are very well equipped for and experienced in conducting dive trips to the *Stavro*. Just about all of them offer at least a one-half day dive excursion to this wreck, including a one tank dive on the wreck itself. Because of its depth, most of the dive operators limit their trips to one dive per day in order to avoid decompression diving or the risk of bends.

Willie's Watersports is perhaps the most conveniently located operator. This watersports center is located right on the beach at the Paradise Beach Hotel, approximately one-half mile from the wreck of the *Stavronikita*. The Paradise Beach Hotel is a deluxe beach resort with 160 rooms and is managed by the Cunard Steamship people. Willie's Watersports is operated by Willie Hassel, a veteran commercial diver and scuba instructor. Willie has been diving for more than 20

years and has done a sizable amount of underwater contracting, including ship salvage, marine inspection and underwater welding, etc.

Willie's dive shop is equipped with two Bauer compressors, 74 rental tanks and three dive boats. The largest of the three boats is a custom 32 foot dive barge which can carry up to 25 divers. This craft is equipped with a front drop ramp and a stern diving platform. The second largest boat is a 26 foot dive barge, also equipped with a front ramp which can hold 10 divers. There is also a 26 foot Flattop which carries 12 divers. Willie is by far the largest dive operator on the island. He caters to individuals and groups.

Scuba Safari is located on the beach at Carlyle Bay, right next door to the Hilton Hotel. This resort dive shop caters to divers and tourists staying at the Hilton Hotel and other hotels in the vicinity.

Owned and operated by Hashim Degia, the shop is equipped with a large Bauer compressor and 40 rental tanks. For dive boats, there is a 16 foot Woodson out-board and a 16 foot Boston Whaler which carry six divers each. Scuba Safari generally conducts dive tours to coral reefs on the south coast of Barbados — Castle Bank and others. However, trips to the *Stavronikita* can be arranged.

The Dive Shop Ltd. is a third shop located at the Holiday Inn. This operation is owned and managed by Paki Degia. There is an inventory of 40 rental tanks and two dive boats. The largest of these is a 32 foot cruiser which can carry up to 12 divers. There is also a 17 foot Boston Whaler equipped for four divers. This dive operation offers single tank dives to wrecks and reefs in the Carlyle Bay area as well as trips to the *Stavro* — an enjoyable and successful U/W experiment. >

WILLIE'S WATER SPORTS BARBADOS

Dive the wreck of the *Stavronikita* only 7 minutes away by our 32 ft. dive barge. Many reef dives and 2 smaller wrecks are also close at hand. We cater for any standard of diver, individual or groups. Also, day sailing on our 41 ft. yachts, water skiing, hobie cats, sunfish glass bottom boat trips. (The largest water sports in Barbados.)

Paradise Beach on the sheltered west coast of Barbados is acclaimed by experienced travelers as among the first, and Paradise Beach Hotel has a worldwide reputation as the fun hotel of the Eastern Caribbean. There are 152 air-conditioned rooms with private baths most of which are situated on the beachfront.

There are two excellent restaurants. The intimate Water Garden with a select a la carte menu, and the more informal Pavillion. Barbecues, Buffets and special entertainments are a feature, with limbo, steel bands and calypsos.

Located at the
PARADISE BEACH HOTEL
St. Michael, Barbados
Tel. 02836 • Telex. WB256



HAPPY HOOKER

Happy Hooker Watersport Center in Oranjestad, Lower Town, is the first dive operation on the island with a full line of rental gear, a 17 foot Boston Whaler and a 43 foot Sportfisherman.

Full certification and resort courses are offered upon request. The certification course, including equipment, is \$150; the resort course is \$80, including four lessons, all equipment and boat trips. A dive package is available for \$120 which includes basic equipment, six guided reef trips and six air fills.

For more information contact: Happy Hooker Watersports Center, St. Eustatius, Netherlands Antilles, telephone 2329 or 2245.

\$299 ROUND-TRIP CALIFORNIA/ GRAND CAYMAN

Cayman Airways has introduced a \$299 round-trip fare between three California cities and Grand Cayman in conjunction with National Airlines. The fare includes air transportation from Los Angeles, San Diego or San Francisco to Grand Cayman via either Cayman Airways' Miami or Houston gateways in either direction. For reservations, phone Cayman Airways (800) 327-2864.

REEF ECOLOGY COURSE

The Carib Inn of Bonaire, Netherlands Antilles, is offering the YMCA's Reef Ecology course. The course includes 12 selected reef trips along with 12 lectures by speakers experienced in this field. Prerequisites for the course include scuba certification and all equipment, as well as a recent medical release filled out and signed by your doctor.

The reef ecology course is being offered at a one-time charge of \$160, including reef trips, tank rental and air fills. The course begins on March 15, 1980 and is six days long. For more information and room rates at the Carib Inn write: A. Bruce Bowker, Carib Inn, Bonaire, Netherlands Antilles or call 8819.

SAINT GERAN HOTEL, MAURITIUS

Southern Sun's Mauritian Resort Hotel, St. Geran, has opened a dive school. The school offers personal instruction for both beginners and advanced divers and maintains ABC equipment, wetsuits, BC's and various U/W photo and motion picture cameras with accessories.

For further information contact: Southern Sun Hotels, 523 W. 6th St., Los Angeles, CA 90014 (800) 421-8905.

OMORKA TOURS

PROUDLY



PRESENTS

DELTA AIR LINES®

DREAM VACATIONS®

WALKER'S CAY
ABACO ISLANDS, BAHAMAS

CAYMAN BRAC
CAYMAN ISLANDS, B.W.I.

ROMORA BAY CLUB
HARBOUR ISLAND, BAHAMAS

MERIDIEN MARTINIQUE
FRENCH ANTILLES

ANDROS
ANDROS ISLAND, BAHAMAS

KOLLER'S REEF
PALM BEACH, FLORIDA

*Specializing in Inclusive Tours for Travel Agents
and Professional Diving Retailers*



COMMUNICATE:
OMORKA TOURS

1-800-241-7977
IN GEORGIA: (404) 428-1588

P.O. BOX 76721
ATLANTA, GA. 30328

Yes! I would like complete package information
on the best of the Bahamas and Caribbean.
I am a . . .

☐ Diver
☐ Non Diver

☐ Travel Agent
☐ Diving Retailer

☐ OTHER _____

Name _____
Agency _____
Address _____
City/State _____
Zip _____ Telephone () _____

Ambergris

A Tropical Retreat in Belize

Caye

Text and Photography by Tom Mount

If you dream of exciting reefs, spectacular canyons and drop-offs, combined with basking on sandy beaches, and retreats to romantic native cottages, then you must visit Belize's Ambergris Caye. This caye is about a half an hour from Belize City by plane and is separated from the Yucatan Peninsula by a narrow body of water.

Our journey to Ambergris Caye began in Miami where we boarded one of Belize Airways Limited's daily flights to Belize City. Our already growing excitement was heightened by the excellent service received on board the BAL flight. Dive partner and friend, Joe Flynn, came along to try out some new lighting techniques for U/W photography. Our model was Patti-Ann Schaeffer.

Clearing customs in Belize was easy and we were impressed with the courteous service. A short taxi ride and we arrived at Maya Airlines where we boarded a plane for Ambergris Caye. Our anticipation continued to grow as we looked out at the barrier reef and a chain of small cayes. Upon landing we were met by a Land Rover. Our equipment was loaded onto the back and within a few minutes we arrived at Ramon's Aqua Lodge.

Our host, Ramon Nunez, greeted us and assigned us to our cottages. The cottages are constructed of native thatch and they blend into the lush, tropical surroundings of palm trees and sandy beaches. Soft trade winds blew across the sea, providing additional atmosphere.

After settling into our cottages, we took the afternoon to look around and explore our surroundings. Ramon's Aqua Lodge consists of several native cottages and a few

hotel-type rooms equipped with ceiling fans, 24 hour electricity, hot and cold water, and comfortable beds. In addition, there is a two story mahogany building which contains the dining room and a well stocked bar. For athletic types, there is a volleyball net and a sailing concession is to be added soon. Fishing is another of the major activities featured on the caye.

After our exploratory trip, Ramon introduced us to our divemaster, Adolfo Ayuso, Jr. Much to our surprise, we were not told to be at the dock at 9 promptly or any other specific time. Instead, we were asked what time we would prefer to dive, a service extended to all groups. As Ramon later explained, "Our guests come here to relax and enjoy themselves, not to follow a routine." Consequently, their policy is to have the divers decide when they want to dive so that the boat and equipment are ready to leave at the divers' convenience.

The next morning, we made our first dive at Tuffy Reef. The incredible canyons there ranged in depth from 50 to 100 feet. Many varieties of fish were present and the photography was excellent. We enjoyed Tuffy Reef so much that we persuaded Adolfo to return there for our afternoon dive. On the second dive we restricted our depth to 55 feet and swam along the tops of the canyons.

Our next dive site was at the north end of Three Coconuts Reef. This dive was along a shelf and we dropped to a depth of 90 feet, discovering a large variety of sponges and soft corals. The visibility was 60 to 90 feet. The following dive at the

south end of Three Coconuts was breathtaking. Here we saw numerous tropicals, many hog snappers and large groupers. Plus a never-ending series of canyons!

Returning to the resort in the evening, we discussed our dives and planned upcoming activities. During the following days, we dived:

Ramon's Canyons: A fantastic dive with large canyons, overhangs and ledges. It is richly decorated in soft corals and translucent blue sponges.

Caye Corker: A delightful dive with visibility in excess of 100 feet. The reef is virtually blanketed with brilliant sponges, many species of tropical fish and lots of hard corals. This dive is a must for any photographer. Even though it is a 25 minute boat ride away, Adolfo took us here on two occasions.

Mexico Reef: Here we saw the most unusual and varied sponges of the entire trip. The area is a series of canyons and ledges which are covered with elkhorn coral, rose coral, brain coral, many soft corals and sponges. It was so picturesque that I shot an entire roll of film in 20 minutes.

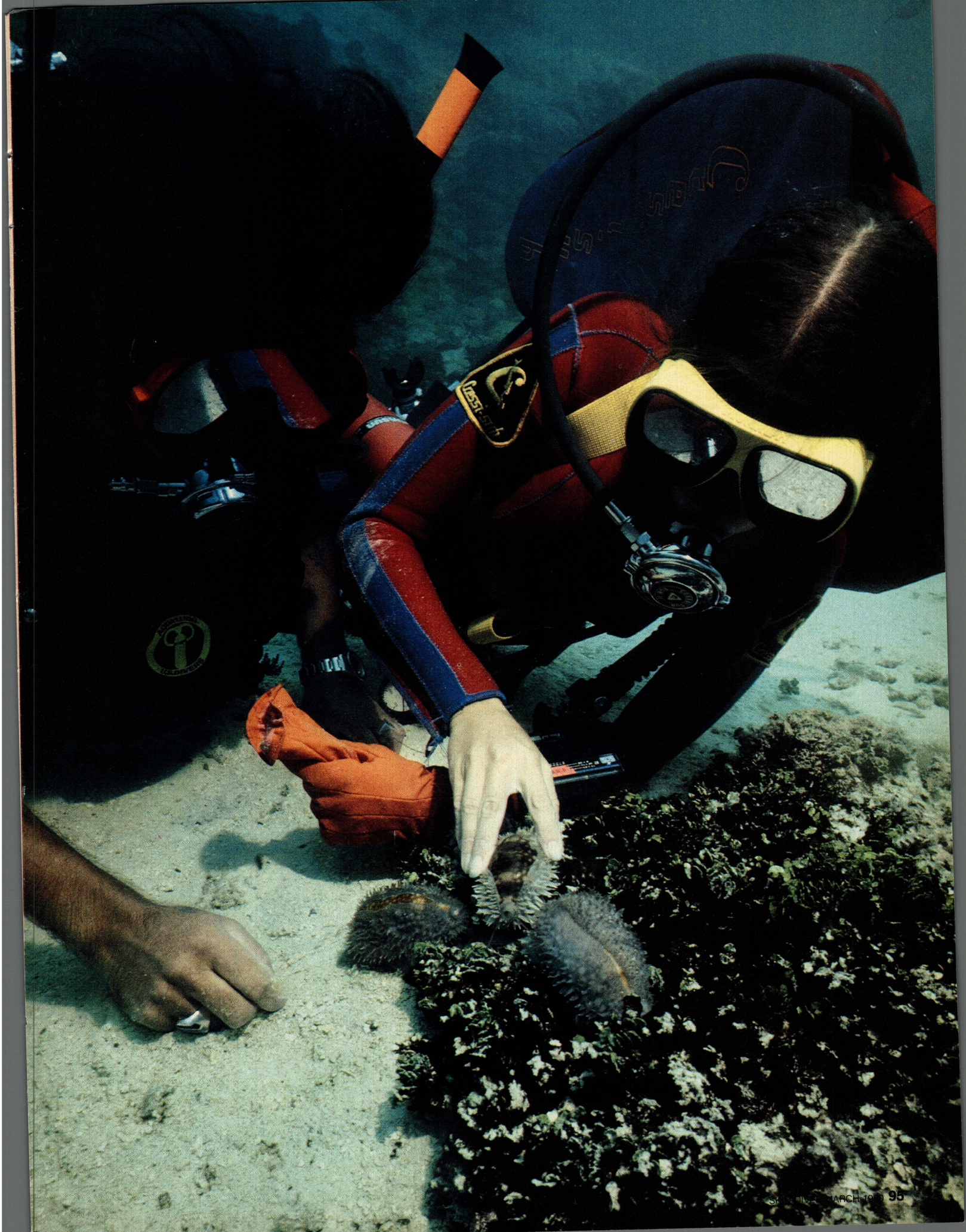
Holchan Inner Reef: This dive is a close-up photographer's dream with a wide variety of hard corals (brain, lettuce, finger, star, rose, etc.), numerous soft corals, and schools of snappers, parrotfish and grunts. There were many juvenile Spanish hogfish, several varieties of

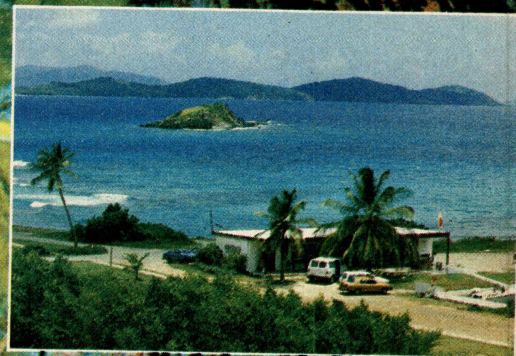
damsels, cleaning shrimp, butterflyfish, and gobies. Plus green and spotted moray eels, large tarpon, and jacks galore. Our maximum depth was 30 feet, so bottom time was unlimited. While it is true that divers should be aware of the current that runs through this area, it is not difficult to swim against.

Holchan Outer Reef: This area features large surge channels and scenic canyons. The top of the reef is about 50 feet and the bottom of the canyons in excess of 100 feet. Colorful sponges decorate the walls of the canyons and make the dive quite beautiful. In addition, large groupers are found here, along with stingrays and numerous other large fish. It is fun to just drift up and down the canyons and jump off the walls as if sky diving.

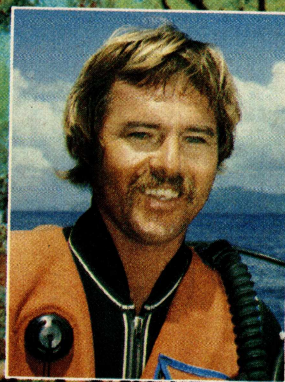
Mexico Cave: Adolfo really enjoyed showing this cave to us. The top of the cave mouth is located in 10 to 12 feet of water. When we dropped into it and looked up, we could see schools of small barracuda, yellowtails, and other schooling fish. Inside the cave there is an amazing assortment of sponges in pinks, reds, oranges, yellows, purples, violets and even white. Along the walls many small lobsters and cleaning shrimp can be found, as well as an occasional nurse shark. On this dive Adolfo restricts the group to four divers and a

(Continued on Page 99)





The Watersports Center at the Sapphire Beach Resort.



Owner Gary Deering.



The 26 foot Chris-Craft makes diving easy.

In recent years St. Thomas, a U.S. Virgin Island, has become a popular destination for the serious diver. And tourism and the dive operators have expanded in numbers and in the services they offer to experienced divers. Glass bottom boat rides and shallow water snorkeling have now been supplemented with large, comfortable dive boats which can reach the excellent dive spots further out from the main island. Now, it is possible to experience the thrill of confronting a school of giant tarpon, diving an offshore pinnacle, or exploring a series of winding caves and tunnels.

One dive operation, a favorite among experienced divers, is the Watersports Center at the Sapphire Beach Resort. One of the oldest and best known dive shop operations on St. Thomas, it was established more than 17 years ago by John Hamber, a pioneer in the dive resort business. Today, this shop has grown into a thriving resort operation, servicing over 5,000 visitors a year.

The Watersports Center is located in the marina of the Sapphire Beach Resort and Village. The resort occupies a hillside at the northeast end of St. Thomas, with a breathtaking view of nearby St. John, Tortola and other Virgin Islands. It is situated in the peaceful countryside of eastern St. Thomas and only a 20 minute drive from downtown Charlotte Amalie.

A contributing factor to the Watersports Center's success is its ideal lo-

young man originally from Canada. Gary has been a diver for 20 years, and made his first dive at the age of 15. A graduate of the University of Toronto, Gary moved to the Virgin Islands 12 years ago and began working at the Watersports Center. Six years later, the enterprising Canadian purchased the operation from John Hamber.

The most outstanding feature of Gary's dive operation is his professional manner. There is basic scuba instruction available for beginners, but the Watersports Center caters to the experienced diver. The dive shop policy is to keep trips down to small groups for personalized service. Divers are then grouped with those who have compatible interests and abilities. For example, underwater photographers might go to Frenchcap Cay while a group of snorkelers will go to the *Cartanser Senior* wreck.

Gary maintains a fleet of four dive boats which handle six divers each. The largest vessel is a 26 foot Chris-Craft Sport Fisherman. There are two 21 foot Seabirds and a 19 foot Robalo. The dive shop has four certified scuba instructors who are either NAUI, PADI or YMCA certified. The dive shop is equipped with two Mako air compressors, 85 steel scuba tanks and a mixture of Sherwood, Scubapro and Sportsways regulators. The center also has a dozen of the latest Seatec Bluefin BC jackets available for rent.

Some of the most exciting dive spots in the Virgin Islands are close to the Sap-

vertical walls of volcanic rock are covered with sponges in hues of red, yellow, orange and pink. For a high voltage dive with a lot of fish, Gary takes his divers to a spot called Outer Brass. Two miles off the north coast, this dive spot usually has such fish as blue runners, crevalle jack, tarpon, mackerel and manta rays. Depths range from 75 to 100 feet with rock and coral terrain.

To the south side is a well known dive called Cow and Calf. Marked from the surface with two small rocks, this dive site offers an excellent tunnel and cave ranging in depth from 15 to 45 feet. The area is honeycombed with caves, canyons and archways which are often filled with schooling fish. Frenchcap Cay is considered to be the finest dive spot in St. Thomas. On the south side of the cay is a submarine pinnacle which begins at 50 feet and slopes steeply to a depth of 95. The area is rich in marine life, including large gorgonians and seafans. Marine creatures seen include spotted eagle rays, barracuda, and horse-eye jacks. Visibility is usually more than 120 feet.

The most popular dive presently available is a full day trip to the wreck of the *Rhone* in the British Virgins. Because Gary is able to reach this site in less than two hours, he has added some extras not to be found with other charter boats. Between dives, Gary takes his divers to a small village on Salt Island just around the corner from the wreck. The village consists of seven huts, housing eight people who have lived there all of their lives. There is no electricity or plumbing and the oldest villager is 79 years old. It is a fascinating tour where one can take a peek into history and meet people living in a culture unchanged in over 100 years.

The Sapphire Beach Resort and Village is a combination hotel and condominium complex. Guests have the option of staying in the hotel or renting a studio apartment or a one or two bedroom suite complete with kitchen. The sprawling resort features four tennis courts, a swimming pool, boutique, bar and restaurant. Sailboat rentals and instruction are also available at the Watersports Center.

The Watersports Center has many dive packages to choose from, ranging from a single day of diving to 7 days of diving, including night dives. The prices vary according to your choice of accommodations and number of dives. There are enough options to fit anyone's budget and schedule. This spring, Watersports Center will offer a special six day, advanced underwater photo course in conjunction with Lynn Rosenthal of the Virgin Islands School of Photography. For more information on prices and special packages, write to: Gary Deering, P.O. Box 2432, Charlotte Amalie, St. Thomas, U.S.V.I. 00801. 

ST. THOMAS WATERSPORTS CENTER

Thriving Resort At Sapphire Bay Caters To Experienced Divers As Well As Beginners

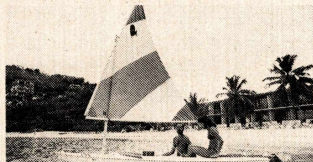
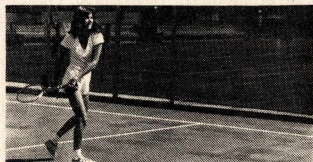
Text and Photography by Geri Murphy

cation for diving. The resort offers fast and easy access to some of the best dive locations in three directions — north, south and east. Seldom is there a day guests cannot find a lee side of the island for a comfortable calm water dive. In addition, the Watersports Center is the St. Thomas dive shop located the closest to the wreck of the *Rhone*. A boat trip to this famous wreck takes approximately two hours.

The owner and manager of the Watersports Center is Gary Deering, a likeable

phire Beach Resort. To date, Gary has charted over 35 sites. One of the most distinctive features of the reefs surrounding St. Thomas is the volcanic rock intermixed with coral. The rocks form archways and tunnels which offer a shelter for schooling fish. Many colorful sponges cover the smooth stone walls like splotches of spilled paint. A typical example of this is a dive spot called Thatch Cay Tunnel. It is a combination stone canyon and submerged tunnel, which ranges in depth from 15 to 35 feet. The

Pineapple Beach Resort Has It All



- ★ Daily Dive Tours with Watersports Center.
- ★ Wreck dives on the Cartanser and Rhone.
- ★ Special Rates for Dive Packages.
- ★ Snorkeling and Diving from the Hotel Beach.
- ★ Gourmet Restaurant.
- ★ Walking Distance to Coki Beach and Coral World.
- Tennis, Sailing, 2 Freshwater Swimming Pools, Restaurant, Snack Bar and Nightly Entertainment.



For more information contact:
 ITR, New York: 212-840-6636
 or Pineapple Beach Resort
 P.O. Box 2516
 St. Thomas, U.S.V.I. 00801
 809-775-1510



EDITORIAL

(Continued from Page 14)

more than a political football field where nations engage in endless rhetoric and insignificant action. The IWC meets once a year to discuss the problems concerning the dwindling whale population but little is really achieved. The IWC has no power to enforce its own rules and regulations and the whalers continue to do as they please. Many nations do not belong to the IWC and therefore totally disregard its regulations. The high seas are much like the wild west of early America; law and justice are almost non-existent and outlaw gangs of whale hunters murder at will. The IWC has been around for 36 years and yet the whales continue to die at a staggering rate. In the eyes of whale activists, violent acts may be the only way to stop an equally violent activity.

The struggle over saving the whales is a much deeper and more complex issue than just conservation of an animal species which is headed for extinction. The whale is more than just another animal — it is considered to be a highly intelligent species which may be smarter than man. Scientists have established that the brain of a whale is of a larger proportion than that of man. In other words, it has the highest ratio of brain mass to body weight of all living animals. Furthermore, there is evidence that whales can do things that man cannot, even though man has sophisticated technology. Whales can hold their breath and dive below the surface more than one mile. They can navigate accurately across vast distances of open ocean. They can communicate long distances by using low frequency sounds underwater. They have their own language and may be able to think as well or better than man. Whales are believed to be the intelligent and dominant species of the seas just as man is the intelligent and dominant species on land. But perhaps the most interesting thing about whales is that they do not make war upon each other nor have they been hostile toward man.

Many environmentalists feel that the hunting and killing of intelligent creatures such as whales is tantamount to murder. They feel that whaling is an archaic and barbaric activity which is as repulsive as slavery, cannibalism or genocide.

How will it all end? This is a difficult question for anyone to answer. The whaling industry knows that it is being pressured for more rigid controls. But it continues to stall. Meanwhile, the activists grow more impatient, and this festering frustration may erupt into whale terrorism. The sequence of events so far points toward an obvious conclusion. Unless the IWC takes drastic steps to curtail whaling or abolish it completely, the whale war may grow worse.

A TIMELY INVESTMENT



Humorist Dick Anderson traces the fascinating odyssey of a \$210 gold dive to a \$16,000 collectors item.

in the April **skin diver**



Nature's way of saying I love you

Barefoot breakfasts by the crystal clear waters of Bonaire Bay. Scuba and snorkeling beyond compare. Beautiful Flamingos in the setting sun. Cool, tall drinks on warm, tropic nights. Moonlit lagoons. Bonaire has many ways to say "I love you." Relax on the way down with ALM Antillean Airlines. Our Dutch Hospitality and experienced staff will get your Caribbean vacation off to a flying start. For information or reservations, call your travel agent, ALM Antillean Airlines or mail the coupon.

**BONAIRE GOVERNMENT
TOURIST BUREAU**
 685 Fifth Avenue, New York, N.Y. 10022
 Telephone: 212-838-1797

Please send more information to:

Name _____

Address _____

City _____

State _____

Zip _____

ALM

THE AIRLINE OF THE DUTCH CARIBBEAN

CALL TOLL FREE: 800-327-7230

In Florida: 800-432-2849

AMBERGRIS CAYE

(Continued from Page 94)

horizontal penetration of less than 100 feet, at a depth of 60 feet. Beyond this point, the cave is less scenic and troublesome silting exists.

Punta Arena (Sandy Point) Reef: This is a sight-seeing wonderland. In addition to walls and canyons, numerous sea caves penetrate the reef and exit at the top of the reef structure in 55 feet of water. Along the wall, one will discover sponges arranged in special bouquets and many sea fans. The top of the reef is overgrown with hard corals and a wide assortment of fish. Turtles and rays are frequently seen so it pays to be observant.



Palmetto Reef: The best way to describe Palmetto Reef is WOW! The water here was even bluer, and if possible, clearer. The wall and incutting canyons start at 55 feet and fall off to about 150

feet. Toward shore there are huge surge channels, with white sand in the middle. The reef is populated with every imaginable hard and soft coral. Brilliant sponges are numerous and schools of all types of fish can be seen.

If you want an even wider variety of diving, you may wish to dive the other exotic nearby areas. The more spectacular of these include Halfmoon Caye at Light-house Reef, and the Great Blue Hole. At Halfmoon Caye there are spectacular vertical walls starting at 40 feet. The Great Blue Hole has its own intrigue to entice and thrill divers. Arrangements to dive these areas can be made through Phil McCorkel, who charts a seaplane. It is exciting to fly to and from a dive site, not to mention the aerial photographs one can take. Larger groups may charter the 31 foot Bertram at Paradise Hotel to visit either of these locations, providing the weather is acceptable.

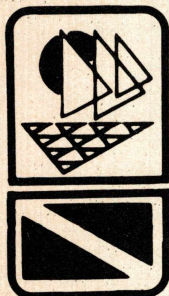
Diving at Ambergris Caye is comfortable, with water temperatures ranging from 80 to 82 degrees. A wetsuit is not needed, however I find a one-eighth inch suit ideal for protection from corals and hydroids. As in all tropical locations, the sun is warm and one should take extra T-shirts and sun screen or lotion. The mosquitos are not as bad here as at many tropical locations, but it is still a good idea to bring along a can of insect repellent.

When traveling in Belize, you may wish to visit other areas such as the lush jungles and rain forest, or the Mayan ruins near Belize City. Coming into the country from the U.S., citizens need only show proof of their citizenship.

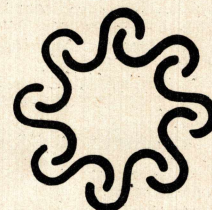
Daily flights service both Belize City and Ambergris Caye. Flights to Belize City originate in Miami and New Orleans. Belize Airways Limited, TAN-SASHA, and TACA all service this area. The native airline, Belize Airways Limited, offers outstanding service.

There are two other resorts which feature diving at Ambergris Caye. The Casa Solana provides diving, snorkeling, sailing and fishing. The resort consists of a two-story hotel, beach and pier. The Paradise Hotel is located in downtown San Pedro and is another resort featuring a native atmosphere. Diving, fishing, sailing, and water skiing are the predominate services offered.

For information or reservations to Ambergris Caye, please contact one of the following: Ramon's Aqua Lodge, % Four Seasons Travel Agency, P.O. Box 2966, Meridian, MS 39301 (601) 693-1166; in Belize, Ramon's Aqua Lodge, P.O. Box 28, Belize City, Belize, Central America; Paradise Hotel, 9225 Katy Freeway #302, Houston, TX, (713) 461-2027; Casa Solana, % Yellowtail Windmill Enterprises, Route 1, Box 40, Palacios, TX 77465, (512) 972-3314.



WATERSPORTS CENTER and Sapphire Beach Resort



St. Thomas, U.S. Virgin Islands

A Great Combination

Diving

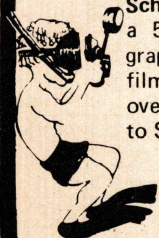
Over 50 dive sites within 20 minutes of Water Sports Center as well as special trips to the Wreck of the Rhone.

Sailing

22 ft. Ensigns and 26' Pearson are available for ½ and full day sailing enjoyment.

Underwater Photo Course

Water Sports Center in conjunction with Island School of Underwater Photography now offers: a 5 day course supported by complete photographic/scuba facilities including all equipment, film, 2 dives a day, classroom instructions and over night processing. Everything from Macro to Super 8 movies, wrecks to reefs.



SALES/RENTAL/REPAIRS
All Nikonos systems and accessories.



Complete Resort

Sapphire Beach features restaurant, snack bar, tennis courts, 1000 foot white sand beach, and nightly entertainment.

Dive Packages

Available upon request during summer and winter season for small groups and individuals.

Please send more information about

Diving Package _____ Group Rates _____

Underwater Photo course _____

Name _____

Address _____

State _____ Zip _____

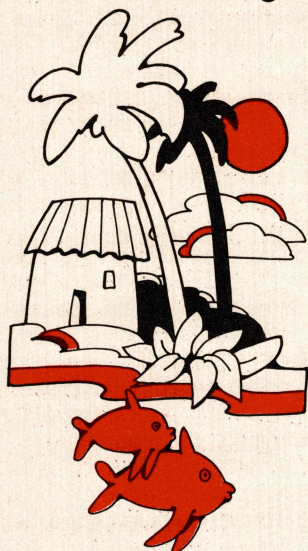
P.O. Box 2432 S2

St. Thomas, U.S. Virgin Islands

(809) 775-0755

00801

Divers Directory



Advertising rate is \$81 for three consecutive ads, \$139 for six consecutive ads, \$214 for a full year. **PAYMENT MUST ACCOMPANY COPY.** Send all material to Diver's Directory, c/o Skin Diver, 8490 Sunset Boulevard, Los Angeles, California 90069.

ALABAMA

MCWHORTER ENGINEERING CO. HP AIR COMPRESSORS
P.O. Box 9014; Plant 1053 Gadsden Rd. units-systems
Birmingham, Alabama 35213 205/836-2814
Rebults/Parts/Accessories/ASME Coded/Since 1952

ARKANSAS

JORDAN DIVING SERVICE (501) 499-7348
Jordan Landing, Lake Norfork, Arkansas 72548
Dive Boats, Rentals, Air/3500, Wreck Dive, 30 Ft. Visib.
Marina, Natural Sand Beach, Camping, Scenic Ozarks

101 BOAT DOCK
B BOX 164, Gamaliel, AR 72537 (501) 467-5252
DACOR SALES & SERVICE, AIR—2 COMPRESSORS
ON LAKE NORFORK, BOAT RENTALS, MARINA

CALIFORNIA

SEALIFE INTERNATIONAL—Great Barrier Reef Tours
PADI Instr. 79-85 Oxford St. Bondi Jct., N.S.W. AUS
2022 Telex-AA22147 PH 387-4588 and 1220 W. Coast
Hwy., Newport Beach, CA 92663 (714) 548-7673

CALIFORNIA SKINDIVING SCHOOLS
8099 Indiana Ave., Riverside 714/689-2422
1173 N. "E" St., San Bernardino 714/885-1416
705 So. Palm Canyon Drive, Palm Springs, CA (714) 323-5551

CALIFORNIA SKIN DIVING SCHOOLS
1083 N. Harbor, Anaheim 991-DIVE
4420 Holt Blvd., Montclair 621-4171
COMPLETE INSTRUCTION IN OUR OWN POOLS

PROFESSIONAL S.C.U.B.A. REPAIR 769-1484
5725 Cahuenga, North Hollywood, Calif. 91601
Professional Repair is Our Only Business
Servicing All Makes & Models of Equipment Since 1961

SCUBA SCHOOLS ANAHEIM/LONG BEACH/OCEANSIDE
1640 W. Lincoln, Anaheim CA 714-956-5540
4740 P.C.H., Long Beach CA 213-433-6765
129 S. Hill, Oceanside, CA 714-722-2455

DIVING LOCKER 1020 Grand, San Diego 714/272-1120
405 N. Hwy 101, Solana Beach, CA 92075 714/755-6822
348 E. Grand, Escondido 714/746-8980
1148 Delevan Dr., San Diego 714/231-8331

WALLIN DIVE STORE (415) 592-7606
1656/58 El Camino Real, San Carlos, Ca 94070
U/W PHOTO SPECIALISTS - AIR - INSTRUCTION
Rentals-Repairs-Travel-Marine Art-Books-Jewelry

CATALINA DIVERS SUPPLY
Avalon, Catalina Island 90704 213/510-0330
Rentals - Sales - Air - 2 Locations 213/510-1286
peasure Pier & Avalon Underwater Park

SPORT CHALET DIVERS (213) 790-2717
920 Foothill, La Canada, Ca.
SALES - RENTALS - REPAIRS - CHARTERS
3300 PSI, L.A. COUNTY-NAUI INSTRUCTION

NEW ENGLAND DIVERS — LOS ANGELES (213) 477-5021
11830 W. Pico Blvd., West Los Angeles
Take Bundy off Santa Monica Freeway to Pico Blvd. Open
7 days. Mon-Sat. (10 am to 8 pm) Sun. (9 am to 5:30 pm)

OCEAN SPORTS, LTD. 714/840-4840
16446 Bolsa Chica, Huntington Beach, CA
Skin & Scuba Gear - Sales - rentals - repairs - air
NAUI-PADI Certified Instruction - dive trips - surfboards

AQUA TECH DIVE CENTER (209) 577-DIVE
1717 Yosemite Blvd., Modesto, CA 95351
Quality at a Discount — Catalog \$2.00
Heated Pool on Premises — "NXIKONOS Dealer"

AL'S SPORTING GOODS 995-3748
Cayucos "At The Pier"
Pismo, 750 Price St. 773-4794
NAUI-PADI, Rentals, Air

ST. GEORGE'S LODGE—Varied Reef Diving
Diver designed private island resort
Comfortable accommodations. Good Food
DTI, 1036 N. Bundy, L.A., CA 90049 (213) 472-0940

NEW ENGLAND DIVERS, 110 The Embarcadero,
San Francisco, CA 94105 (415) 434-3614
Service, Sales, Instruction, Trips
Mon-Thurs: 10-6, Fri: 10-8, Sat: 9-5

THE OUTDOORSMAN
2358 Lake Tahoe Blvd., So. Lake Tahoe, CA (916) 541-1660
3733 N. Carson St., Carson City, NV (702) 883-2755
Sales, PADI Lessons, Air Fills, Repair

NEW ENGLAND DIVERS—SAN DIEGO (714) 298-0531
3860 Rosecrans St., San Diego
8363 Center Dr., La Mesa (714) 462-4750
Weekly Boat Trips. PADI, NAUI Certification.

COLORADO

ROCKY MOUNTAIN DIVING CENTER
4479 Broadway, Boulder, CO 80302 449-8606
1920 Wadsworth, Lakewood, CO 80215 232-2400
Largest inventory in the Rocky Mountain region

CONNECTICUT

ORBIT MARINE SPORTS CENTER (203) 333-DIVE
3273 Fairfield Ave., Bridgeport, Conn. 06605
Tel. (203) 333-DIVE - Sales - Rentals - Air - Dive Trips
Hydro - NAUI Instruction - Visual Inspection. Open All Year!

INNERSPACE DIVING SUPPLY CO., INC. (203) 646-2352
598 Center St., Rte. 6, Manchester, CT • PADI 5-STAR •
Air-Sales-Rentals-All Services-Dive Club-Dive Trips
Certified Instruction in all levels-NAUI-PADI-YMCA

THE DIVING BELL (203) 775-3573
Route 7, Brookfield Plaza, Brookfield, CT
Full Service Pro Dive Shop - P.A.D.I. Instruction
DIVE LAKE CANDLEWOOD / Weekly Boat Trips

WIN-SUM SPORTS (TRI-CITY DIVERS) 203/872-6547
Route 30, Post Rd. Plaza, Vernon, Ct - Exit 96 off I-86
Sales - Rentals - Repairs - Air - Hydro Testing - Trips
NAUI - PADI Instruction Connecticut's Largest

SKI & SCUBA SHOPPE (203) 377-6969
Stratford Marina, Ft of Broad St., Stratford, CT 06497
U/W Photo Specialists - Licensed Dive Charters
Sales - Rentals - Service - Instruction

SEA WOLF DIVER'S SUPPLY phone 873-8135
Town Street, Route 82, East Haddam, Conn. 06423
Sales - Certified Instruction - Rentals - Repairs - Air
A Full Service Dive Shop

JACK'S DIVE CENTER (203) 747-3170
Rt. 10, Plainville, Conn. 06062
Sales - Service - Instructions - Rentals - Trips
5,000 PSI Air - AGA Divator - HOME OF FREE DIVES

FLORIDA

DIVER'S DEN SOUTH (305) 595-2010
12614 N. Kendall Dr., Miami, FL 33186
PADI 5-Star Instruction & Specialty Courses
Sales & Service, Local & Island Dive Trips. Photo-Air

PORT PARADISE MARINA 904/795-7437
P.O. Box 516, Crystal River, FL 32629
PADI or SSI Advanced Open Water Vacation Package
Complete Spring Diving Vacation

BLUE GROTTTO Call 1-904-528-6684
for the greatest personal escorted cavern dive in the world.
We guarantee our dive to be as advertised. By Rsvn. Only.
Info-BLUE GROTTTO, Rt. 2, Box 460-B, Williston, FL 32696

UNDERSEAS, INC. (305) 872-2700
Box 319, U.S. 1, Big Pine Key, Florida 33043
Equipment - Air - Rentals - Repair - Reef Charters - Shelling
Guides - Photo - Spearfishing - Tropical Fish Collecting

HERB'S DIVE SHOP 253-7221
2434 S. Atlantic Avenue (AIA), Daytona Beach, Florida 32018.
Full Diver Service — Group or Private Classes
Trips: Reef - Springs - Bahamas - Reef - Springs - Bahamas

SEA DWELLERS DIVE CENTER
At Port Largo Airport
Dive charters - Air - Rentals - Instruction
P.O. Box 1796, Key Largo, Fla. 33037 Ph. 305/451-3640

HALL'S DIVING CTR & RESORT (305) 743-WISH or 743-5929
1688 Overseas Hwy., Marathon, Florida Keys 33050
Certified Instruction — Reef Trips — Rentals
Inst. College—9 to 6—7 days a week—Group Rates on Request

REEF RAIDERS DIVE SHOP 305-294-0660
U.S. Hwy #1, Stock Island, Key West, Fla. 305-294-3635
Two Reef Trips Daily - Wreck and Night Diving
Air-5000 PSI. Rntl and Sales on all diving equip.

LAUDERDALE DIVER Phone: (305) 46 SCUBA
1334 S.E. 17th St., Fort Lauderdale "On the Causeway"
Complete Master Diver Program, #1 PADI Facility 1978
Instruction-Sales-Service-Air-Photo-Trips. Widest Selection

SEA TRAIL MOTEL - REEF TRIPS (305) 852-8001
Rt. 1, Box 91, Key Largo, FL 33037 - Mile Marker 99-98
T.V., Air Cond., and Refrig. - Budget Rates
Guided Trips—Inst.—Snorkeling—6 passenger

CAPT. BOB KLEIN'S HOLIDAY INN SCUBA SHOP
P.O. Box 1849, Key Largo, Fla. 33037 305-451-DIVE
Guided Reef Trips/Cay Sal Blue Hole Dives
Go First Class aboard the 50' "Plus Ultra"

ANGLER'S DIVE SHOP (305) 294-4248
US 1, Stock IS., Key West, Fla. 33040
Dive Boat Rentals, Family Reef Trips, Shelling, Air
Hydro. From the Island you can Drive to and Dive.

NEW ENGLAND DIVERS 305-573-4600
2945 NE 2nd Ave., Miami, Fla.
9820 S. Dixie Hwy., Kendall 305-667-4622
Sales - Rental - Classes - Instruction

BILL CRAWFORD'S TROPIC ISLE DIVE SHOP
P.O. Box 755, Key Largo, FL 33037 (305) 451-1063
Reef Trips — Photo & Scuba Rentals
NIKONOS REPAIR CENTER

POWER DIVE — FLY UNDERWATER — CRUISE
Scuba Tow Plans \$8 — West Sub Plans \$15 — Parts
Tow & Sub Building Handbood + 3 Tow Plans \$10
SEATECH CORP., 985 N.W. 95 St., Miami, FL 33150

OCEAN DIVERS INC. BEAUTIFUL PENNEKAMP PARK
U/W PHOTOGRAPHY
DIVING AND SNORKLING
BOX 1113-A KEY LARGO, FLA. 33037 PH. 305/451-0286

GINNIE SPRINGS, INC. (904) 454-2202
Rt. 1, Box 153, High Springs, Florida 32643
Six 72" Clear Blue Springs on Santa Fe River, Camping,
Canoeing, 5000 PSI Air Station, Full Serv. Dive Shop

NORINE ROUSE SCUBA CLUB of the PALM BEACHES
4708 N. Dixie Highway 305/844-2466
West Palm Beach, Florida 33407
A membership club for certified divers

Gary Rinn's SUNDIVER'S STATION 305/451-0676
Rt. 3, Box 289-A, Key Largo, FL 33037
Dive Pennekamp-Reefs-Wrecks-Photography
Instr.-Guides-Complete Rentals-Dockside Air

Jim Hollis' SCUBA WORLD 305/273-3373
5107 E. Colonial Dr., Orlando, FL 32807
(Across from Hwy. Patrol Station)
Sales, Service, Rentals, Tours. Classes-PADI, FSDA, YMCA

KEY LARGO DIVING HEADQUARTERS 24 Hour Hot Line
Rt. 1, Box 293, Key Largo, FL 33037 305/451-1151
Pennekamp Reef Trips-Air-Rentals-Dorms-Apartments
Group Rates-Cay Sal, Bahama, and Tortuga trips

Oceanfront Cottage—U.S. 1, Marker 96, Key Largo, Fla. 20'
from Atlantic Ocean. 2 Br., 2 bath completely furnished.
Pool & tennis avail. Wkly Rates May-Nov. P. Tanner, 2015
South Lake Cannon Dr., Winter Haven, FL. 813/293-6889

Key Largo Condo—2 bedrooms, 1½ baths, accommodates 6,
walking distance to Pennekamp, totally equipped, tennis,
sauna, boat rentals. Write: Moon Bay Condos,
c/o D. Goldstein, 509 Long Rd., Pittsburgh, Pa. 15235

OCEAN SPORTS, INC.
129 Miracle Strip Parkway
Ft. Walton Beach, Florida 904/244-7681
PADI — DIVE TRIPS — RENTALS — AIR

NAUTILUS DIVE, SURF & SKI
877 E. Palmetto Pk. Rd., Boca Raton, FL 368-0555
2700 E. Atlantic Blvd., Pompano Beach 943-DIVE
NAUI — PADI — Sales — Rentals — Air

CRYSTAL LODGE DIVE CENTER (904) 795-3171
P.O. Box 456, Crystal River, FL 32629
Boat & Scuba, Sales & Rental
Fresh & Salt Water Diving, PADI Instruction

EASY DOES IT CHARTERS (813) 586-2201, 347-1382
Dive - Sail - Sleep on 40' A/C Motorsailer-party to 6
Tanks-Wts.-UW Camera, Wrecks-Reefs-Gulf-Dry Tortugas
Free Brochure; 9075-130th Ave. N., Largo, FL 33542

QUIESCENCE DIVING SERVICES, Inc/Pro Dive Shop & Marina
Instruction & Charters in Pennekamp Park—Rentals/Repairs
Air/Sales/Dockage (305) 451-2440 — Key Largo
Kampground, Box N-13, Key Largo, Fla. 33037/MM. 101.5

AQUA SHOP
Dive Trips, Palm Beaches, Springs, Keys, Bahamas
Full Service Dive Shop — N.A.S.D.S.
1408 - 10th St., Lake Park, Fla. (305) 848-9042

DIVERS WORLD UNDER SEA CENTER (305) 844-1510
2525 Lake Dr., Riviera Beach, FL 33404
Daily Dive Trips, Full Rental & Sales Shop—Accom.,
Restr., Pool, Resort Course, 2 boats, spearfishing, nite dives

FRED & CINDY'S ATLANTIS MARINA (305) 664-4318
Florida Keys, Box 708, Long Key, Florida 33001
Boat Rentals to the Reef - Camping - Motels
Air - Rentals - Trips - Complete Dive Service

BLUE GROTTTO Call 1-904-528-6684
for group or escorted diving in our fabulous cavern, by rsvns.
only. No price increases due to fuel costs and shortages.
Info-BLUE GROTTTO, Rt. 2, Box 460-B, Williston, FL 32696

CHARLOTTE DIVERS # 368
861 S.E. Tamiami Trail
Charlotte Harbor, FL 33950 813/629-2722
PADI—S-368—Rentals—Repairs—Trips—Air

MATHENY'S AQUATICS UNLTD.—"OPEN 7 DAYS"
1472 Park Ave., Orange Park, FL 32073 (904) 264-3357
NASOS-Lessons-Indoor Pool-Trips-Keys-Palm Beach
Scubapro, SAS, Dacor, AMF, Sherwood, Seapro, Submaxex

STEVE KLEM UNDERWATER GUIDE SERVICE
P.O. Box 1803, Key Largo, FL 33037 (305) 451-1831
GUIDED REEF TRIPS TO PENNEKAMP
Scuba & Photo Inst.-Photo Rentals-Film Lab

TRIDENT UNDERWATER EXPLORERS CLUB
P.O. Box 788 (BOCA RATON) FL 33431
ADV. INSTRUCTION/EXPEDITIONS/RENTALS
A membership organization

HURRICANE (SUNSHINE KEY) AQUA CENTER (305) 743-2400
4650 Overseas Highway, Marathon, FL 33050
DIVE LOOE KEY w. Capt. Ed Davidson, day/overnight
64 Ft. boat, 5000 psi. New location-motel-restr., bar

DIVER'S WORLD OF KEY LARGO, INC. (305) 852-5498
P.O. Box 1663, Key Largo, FL 33037
On the Atlantic at Rock Harbor Marina-Marker 97.5
Reef Trips-Air-Instruction-Sales-Rentals

GEORGIA

DIVING WORLD USA
2945 Buford Hwy., Atl., Ga. 30329 634-4354
All Brands - Whol. & Retail - Repair - Rental
YMCA, NAUI, PADI Classes 3 Man Chamber

BERRY ATLANTA 404/766-1186
3443 Stewart Ave., Hapeville, Ga.
Just a few minutes from I75 or Airport
Air - Rentals - Repairs - Instruction

SUB-AQUA SPECIALTIES
2236 Bemis Rd/206 E. Hill, Valdosta, GA
Mail Order, Toll Free 1 (800) 841-4443
GA 1 (800) 342-7156/AK, HI, PR, VI 1 (800) 841-5000

HAWAII

DAN'S DIVE SHOP, INC. (808) 941-2284
1382 Makaloa St., Honolulu, HI 96814
Hawaii's Sport Dive Center - Free Dive Information
Checkouts, 5 Day Classes, Tours, Air, Rent, Sales

GOLD COAST DIVERS (808) 329-1328
P.O. Box 2064, Kailua-Kona, HI 96740 329-9266
Two full service Stores • We invite you to join
us for the finest diving the Kona Coast has to offer •

SOUTH SEAS AQUATICS Ph: 538-3854, 538-3855
1125 ALA MOANA BLVD.
HONOLULU, HAWAII 96814
Sales - Rental - Boat Charters - Free Brochure

HAWAIIAN DIVERS 808-329-3407
Box 572, Kailua Kona, HI 96740
"The Experts in Kona"
Daily Trips, Rentals, Instruction, Sales

DIVIN' HAWAII CORP. (808) 833-2298
5085 Likini St. Honolulu, HI 96818
SCUBA & SNORKEL TOURS TWICE DAILY/NAUI & PADI Instr.
U/W Photography, Free Transport, Beginners Welcome

AMERICAN DIVE HAWAII (808) 923-5382
P.O. Box 88161 Honolulu, HI. 96815
SCUBA & SNORKEL TOURS DAILY/5 DAY CERT.
U/W Photo, Hotel Pickup, Air, Sales, Rental

OCEAN ADVENTURES (808) 235-5055
46-216 kahupia st., kaneohe, hi. 96744
TOURS DAILY/INSTRUCTION/SALES/RENTALS/PHOTO/AIR
complete underwater specialists

AQUATICS KAUAI, Ltd. "Underwater Educators"
4442 Makaha Rd., Kapaa, Kauai, HI 96746 808/822-9213
Underwater photography, Advanced scuba ratings.
SNORKEL-SCUBA DIVE TOURS.

SEA SAGE PROFESSIONAL DIVING CENTERS
4544 Kukui St., Kappa (Kauai) HI 96746 (808) 822-3841
May We Share Aloha By Gently Introducing You
To The Wonders Of Our World. NASDS SAFE SCUBA

CENTRAL PACIFIC DIVERS
780 Front St. Lahaina, Maui, HI 96761 (808) 661-4661
74-5484 Kaiwi St., Kailua Kona, HI 96740 (808) 329-3168
Daily Diving Trips, 5 Islands, Submarine Dives

LAHAINA DIVER'S, INC. 808/661-4505
P.O. Box 1547, Lahaina, Maui, HI 96761
For a Good Time Call Blain or John
RECOMMENDED BY UNDERCURRENTS

ALAS-KONA DIVERS, INC.
Box 3144, Kailua-Kona, HI 96740
Specializing in personal instruction on the
Unspoiled Kona Coast

SCUBA—BOAT RENTAL — HAWAII
20 Sand Island Rd., Honolulu, Hawaii 96819 808/845-4561
Professional Dive Shop - Instruction - Water Skiing
Custom tours to the best diving on Oahu

DIVE MAKAI CHARTERS
P.O. Box 2955, Kailua-Kona, HI 96740 (808) 329-2025
Not Kona's Biggest—KONA'S BEST
Small, personal charters. YOU are boss. WRITE!

ALOHA DIVE SHOP—Koko Marino
Hawaii-Kai, Honolulu, HI 96825
"GATEWAY TO HANAUA BAY" (808) 395-5922/395-8882
Scuba Tours-Classes-Rentals-Sales-Air NASDS

ILLINOIS

THE OUTDOOR STORE 618/277-5151
2224 W. Main, Belleville, Ill
U.S. Divers-White Stag-Tekna-Ikelite-Farallon
Aqua Craft-Wenoka-Air-Rentals-Accessories

WATER SHED DIVE SHOP (618) 457-3397
1028 E. Walnut, Carbondale, ILL 62221
Sales - Rental - Air - Repair - Recovery
NAUI Instructions

BERRY SCUBA
6059 W. Addison, Chicago (312) 725-2032
12003 S. Cicero, Alsip (312) 371-3366
1717 Rand Road, Palatine (312) 358-3848

AQUA CENTER 43 E. Downer, Aurora 896-3596
AQUAVENTURE 1655 Oakton, Des Plaines 297-7414
AQUAVENTURE Rowling & Euclid, Arl. Hts. 398-5139
Instruction-NASDS-Air-Rentals-Tours-Services

ELMER'S WATERSPORTS, INC.
2508 Gross Point Rd., Evanston, IL 866-8775
Equipment Sales - Services - Rentals - Air
Tours - Certified Instruction

ANCHOR IN SCUBA CENTERS
315 W. Ogden Ave., Westmont (312) 971-1060
6932 W. 16th St., Berwyn (312) 484-1018
UN/H2O Camera Shop - Instructions - Rentals - Tours

MIDWEST DIVING SPECIALISTS, INC.
203 S. Linden, Normal, IL 61761 (309) 452-0222
YMCA, PADI, Air, Sales, Service, Rentals
M thru F 10 A.M.-8 P.M. Sat. 10 A.M.-5 P.M.

ACE DIVE SHOP 312/530-7101
126 S. Villa, Villa Park, IL
Sales - U/W Tours Salvage Open Sundays
Air, Repairs, Hydro. Vip, Tumbling Instruction

SCUBA SYSTEMS (312) 674-0222
3919 Oakton Street, Skokie
Sales, Service, Rentals, In-Store Pool
Discount prices, PADI Instruction

BLUE HOLE, INC. (309) 676-1852
4817 West Farmington Road, Peoria, Ill. 61604
INSTRUCTION - Sales - Service - Rentals - TOURS
Open M-W-F 4-8 p.m. - Saturday 9 a.m.-5 p.m.

INDIANA

SCUBA JOE'S
14410 Morse St., Cedar Lake, Ind. 219/374-9077
Sales and Repairs, Imperial U.S.D.
DACOR, PADI Training Facility

KANSAS

THE DIVE SHOP, INC. K.C. area 913/381-4400
3606 W. 95th St., Leawood, Ks 66206
Sales 7 days, YMCA, PADI, NAUI. Local & ocean trips.
Photography, Repairs, Air, Rentals, Commercial.

KENTUCKY

LOUISVILLE LEXINGTON DIVE SHOP, 2478 Bardstown Rd.,
Louisville, KY 40205, 502/458-8427
809 Euclid Avenue, Lexington, KY 40502, 606/266-4703
"Everything in Diving"

LOUISIANA

AQUA CENTER (318) 742-6481
117 Bossier Center Crossroads, Bossier City, LA
Professional Instruction - V.A. Approved
Air - Sales - Repairs - Rentals - Tours

MAINE

NORTHEAST DIVERS Phone: (207) 989-4330
347 Wilson Street, Brewer, Maine 04412
OPEN ALL YEAR 6 DAYS 9am-5pm. COMPLETE LINE of
SKIN & SCUBA EQUIP.-SLS-SVS-RNTLS-AIR-mail order.

AQUA DIVING ACADEMY
1183 Congress St., Portland, ME 207/772-4200
Skin & Scuba Sales, Service, Air Station,
Instruction and rentals, NASDS

AQUA CITY SCUBA, 11 Water St.,
Box 598, Waterville, Maine 04901 (207) 873-0266
Sales, Air Fills, In-Shop Repair Service, Rentals,
Mail Order, Cert. Instructor, Posiden, DACOR, U.S.D. etc.

MARYLAND

DIVERS DEN, INC. Tel: 668-6866
8105 Harford Rd., Baltimore, Md. 21234
Sales - Service - Air - Rentals - Boat Trips -
Instr. - Custom Suits - Tours - Metal Detectors

PARKS DIVING SUPPLY Tel. 301/655-8744
Wholesale & Retail Commercial & Sport Diving Equipment
SALES-SERVICE-RENTALS-LESSONS-CHARTERS-AIR-
MIXED GAS - 8027 Liberty Road, Baltimore, MD 21207

GALAXIE SALES INC. HARFORD CO. SCHOOL OF SCUBA
1221 Belair Rd., Belair, MD 21014
NASDS Cert. Instr. - Sales - Serv. - Air - Rentals
Charter Dives 301/879-0650 or 877-1926

SEA COLONY DIVE SHOP
8470 Ft. Smallwood Rd., Pasadena, MD 21122
NAUI Instr.-Sales-Service-Air-Rentals
Trips-Wreck Diver (301) 255-7300, 255-4330

MASSACHUSETTS

EASTERN DIVERS SUPPLY INC. 617/453-7574
453 Gorham St., Lowell, MA
Professional Instruction — All Levels
Full Service Dive Store

CAPT. FRED CALHOUN'S U/W SAFARIS 617/283-4933
Cape Ann Dive Charters - Bahama Dive Tours
NAUI Certified U.S.C.G. Licensed - Lectures
Box 291, Back Bay Annex, Boston, Mass. 02117

INLAND DIVERS 617/892-3323
100 S. Main St., Leicester, Mass. 01524
Sales, Rentals, Repairs, Air, Hydros,
Indoor Heated Pool — Inst. NAUI, PADI, YMCA

EAST COAST DIVERS, INC. 617/277-2216
213 Boylston St. (Rte. 9), Brookline, Mass. 02146
Full Service for your diving needs
Sales, Rentals, Repairs, Lessons, Air, Trips, and more

SOUTH SHORE SKINDIVERS, INC.
511 Washington St., Quincy, Mass 02169
617/471-9800 - 617/773-5452 — Hydrotests
Air Fills, Scuba Classes, Rep's Trips

NORTHEAST SCUBA, INC. (617) 774-7296
125 Liberty St., Danvers, Ma. 01923
Sales, Air, Rentals, NAUI Instr.
Repairs, Hydros, 3 Day Service, 1 Wk. M.O.

Divers Directory

MARINE SPECIALTIES, INC. (617) 487-1764
Provincetown, Ma. (Cape Cod)
Air Station, boat rental, full line of equipment.
Poseidon Parkway, Dacor dealer

EAST COAST DIVING CHARTERS, INC.
Diving Charters from Cape Cod to Cape Ann, Mass.
For Cape Cod Call (617) 775-1185
For Boston and Cape Ann Call (617) 277-2216

SHIP MATE DIVE SHOP 617/385-8782
Sesuit Harbor, East Dennis, Mass.
Sales, Rentals, Repairs, Charters, Air
Sailboat Rentals and Beach Diving

MARINE CONTRACTING SCUBA SHOP INC.
195 Princeton St., N. Chelmsford, MA
(617) 251-4895, Sales, Lessons, Repairs
Rentals, Certs., NASI, PADI

MICHIGAN

SCUBA NORTH, INC. (616) 947-2520
13258 West Bayshore Drive, Traverse City, MI 49684
NAUI-PADI, Retail-Wholesale, Repairs, Hydro test, Lessons,
Charters, Rentals, Sailboats, Windsurfing, Compressors.

HIGGINS LAKE SPORTS CTR. 517/821-9241
9982 W. Higgins Lake Dr., Higgins Lake
Mich. 48627 Equipment - Rentals -
3000 PSI Air Station-Instr-SSI-PADI-OPEN ALL YEAR

SEAQUATICS, INC. 517/835-6391
28 Ashman Circle, Midland, Mi. 48640
Sales - Rentals - Air - Repairs - Hydro
Wreck Diving - Travel - Instruction - SSI, PADI, NAUI

MISSOURI

JOHN THE DIVER, INC. SCHOOLS OF DIVING
S.R.I., Box 459, Branson, Mo. 65616 417-338-2224
2555 So. Campbell, Springfield, Mo. 417-887-0606
110 E. 25th St., Joplin, Mo. 64801 417-624-4511

DIVERS VILLAGE, INC.
Lake Rd. W-20 Lake Ozark, Mo. 65049
7th and Locust Columbia, Mo. 65201
FULL SERVICE PRO SHOPS

WEST END DIVING CENTERS, INC.
11004 Manchester, St. Louis, Mo. 314-822-3005
11215 Nat. Bridge Road 314-731-5003
Retail, Whsle, Repairs, Compr, Rental, Instr., Air 5000

DIVERS EQUIPMENT & REPAIR SERVICE, INC.
5800 Barrymore Dr., KC, MO. 64134
SALES (Large Stock) Hydro-Air-Repair-Trips.
NASDS INSTRUCTION — INDOOR HEATED POOL

NEBRASKA

"BIG MAC" SCUBA SHACK (308) 726-2532
Sportsmens Complex, Lake McConaughy, NE 69122
Air, Sales, Trades, Rental, Repair and Service
Nebraska's ONLY Pro Dive Shop, SSI, Dive Trips

NEW HAMPSHIRE

LAPORTE'S SKINDIVING SHOP, LAKE SUNAPEE, N.H.
Route 103, Box 53, Newbury, N.H. (603) 763-5353
Sales, Service, Rentals, Air, Salvage
5 Star PADI Store — Certified Instruction

UNDERWATER SPORTS OF N.H. (603) 357-4430
334 Park Avenue, Keene, N.H.
Lessons - Sales - Service - Rentals - Air
Hydro - Trips - Salvage - Commercial Work

NEW JERSEY

INNERSPACE DIVERS OF LONG BEACH ISLAND, INC.
2805 Blvd. Beach Haven Gardens, N.J. 609/492-0982
S. Jersey's ONLY Full Service Professional Dive Shop
Jersey Wreck Dives - OPEN ALL YEAR (609) 494-2284

MARLIN SCUBA
506 Rt. 17, Ramsey, N.J. 07446 (201) 327-6000
Equipment - Repairs - Air Station - Instruction
Indoor Pool - PADI - YMCA - NAUI - British Sub Aqua

LAKELAND DIVERS, Inc. (201) 887-0194
92 Rt. 10, East Hanover, N.J. — YMCA, NAUI, PADI
"The Full Service Dive Shop"
Indoor Heated Pool on Premises

PRINCETON AQUA SPORTS (609) 924-4240
306 Alexander Street, Princeton, N.J. 08540
YMCA, NAUI, PADI Instruc. - Sales - Rentals - Air
Service - Hydros - Charter Boats, Trips.

UNDERWATER ASSOCIATES, INC.
Rt. 17, Rochelle Park, NJ 07662 (201) 843-3540
One Stop Pro Shop-Air, Sales, Trips, Rental, Repair
Certified Coed Instructions in our Heated Pool

Mar-Vel Airpower, Inc. (609) 962-6040
Rte. 130, South - Box K, Collingswood, N.J. 08108
HP and LP compressors, air testing, filters, sport
and commercial equipment repairs, catalog - charters

THE QUARRY DIVE SITE
Rt. 517, Hamburg, N.J. 07419 201/827-7630
Swimming - Scuba Diving - Cross Country Skiing
70 Acre Park - 7 Acres Water-Bar-Grill-Dive Shop

CEDAR GROVE DIVERS SUPPLY
Nat'l. Cert. Instr. - Private or grp. lessons
Indoor heated pool - Full service dive shop
492 Pompton Ave., (Rt. 23), Cedar Grove, NJ 07009

TRITON DIVERS (of Long Beach Island), Tenn & Blvd.,
114th St., Haven Beach, NJ 08008 (609) 492-2310
(609) 494-3040 (Deb Whitcraft), OPEN ALL YEAR
Full Service Pro Dive Shop, Charters aboard "Black Whale"

MANNY & MARY'S SPORT SHOP (201) 787-0508, 787-9560
Rt. 36, E. Keansburg, NJ 07734
Discount Prices, Rentals-Air 3000 PSI
Indoor Pool, Instructions, Repairs

THE DIVE SHOP OF NEW JERSEY
746 West Ave., Ocean City, NJ (609) 398-6551
Instruction - Sales, Rental, Air
Dive Trips - NAUI, PADI

NEW YORK

Marty Bayerle's AQUA VENTURES (212) 377-7100
NYC's oldest exclusive dive shop. Lessons, Repair
Whsl/discount retail, \$1 Air, Dive Boat, Rentals
pkg, 2801 Flatbush (300 yds N of Belt Pky) Brooklyn

THE DIVE SHOP, INC. Open 7 Days
110 West Main St, Bay Shore, NY 11706 516/665-2526
68' Dive Vessel (USVI), Indoor Pool, Rentals, Wreck
Diving, NAUI-PADI-YMCA Instr., Repairs, Hydros, Air

RICHARDS AQUALUNG CENTER Times Square
233 W. 42nd St., Manhattan 10036 212-947-5018
Largest Pro Dive Shop - All Latest Gear
Quantity Prices - Service-Courses, Basic & Adv.

GREAT LAKES DIVERS, INC. 716/836-6900
244 Niagara Falls Bl, Buffalo, N.Y. 14223 716/759-2454
NAUI-PADI-INST-SALES-RENTALS-CHARTERS-REPAIRS
LICENSED TANK TESTING-PURE AIR-SALVAGE

HARVEY'S MT. SHEEPSHEAD DIV. CTR. (212) 743-0054
3179 Emmons Ave., Brooklyn, N.Y. Sheephead
Bay-Instant Refills-5000 PSI-Custom Suits
Instr. - Low Prices - Hydrotesting - Wrecks.

CENTRAL SKINDIVERS Open 7 Days
2608 Merrick Rd., Bellmore, N.Y. (516) 826-8888
160-09 Jamaica Ave., Jamaica, NY (212) 739-5772
Rentals, Repairs, Fills, Trips, Lessons

KINGS COUNTY DIVERS CORP.
Brooklyn's Full Service Pro Shop
Authorized Scubapro Dealer
3040 Ave. U 212/648-4232

72's - Home of Hampton Bays Divers, Inc.
Flanders Rd., Riverhead, L.I., N.Y. 11901
Indoor-Heated pool (516) 727-2642
Complete SCUBA facility (1/4M E/O Big Duck)

EAST COAST DIVING, INC. (212) 979-6056
1724 Hylan Blvd., Staten Island, N.Y. 10305
Air, Sales, Service & Rentals
40' Charter Vessel "Kiwi"

NIAGARA SCUBA SPORTS 6 Days, 4 Evenings
2048 Niagara St., Buffalo, NY, Near Hertel (716) 875-6528
Sales, Rentals, Cert. Pure Air, Tank Service, Repairs
Local Boat Dives, Tours, All Cert. Complete Dive School

PROFESSIONAL DIVE TRIPS, INC. (212) 332-9574
Capt. Bill Reddan - 3662 Shore Pkway, Brooklyn, NY
Aboard 40' M/V "Terry." USCG Lic., Full Equipment
Wrecks, Lobster. Nite Dives, Adv. Courses YMCA/PADI

NYPENN DIVERS & SPORTS SUPPLY, INC.
400 Prospect St. Exit 71 off Rt. 17
Binghamton, NY 607-729-4988
Sales-Service-Rentals-Trips-Instruction

MARSHALL'S PRO DIVING SERVICE (607) 387-7321
Heart of the Finger Lakes (near Ithaca)
Frontenac Road, Trumansburg, N.Y.
Cert. Inst. - Sales - Service - Rentals - Air

WESTCHESTER DIVE CENTER & SCHOOL (914) 937-2685
62 Westchester Ave, Port Chester, NY 10573
Sales, Rentals, Trips, Charters, Custom Suits
Areas Most Comprehensive Year-Round Scuba School

NATIONAL AQUATIC SERVICE, INC. (315) 479-5544
1425 Erie Blvd. East, Syracuse, New York 13210
NASDS Instruction - Sales - Service - Rentals - Tours
Open 9 to 5 Daily.

WHEEL HOUSE DIVE SHOP, INC. 212/377-5303
2917 Ave I, Brooklyn, NY 11210 OPEN 7 DAYS A WEEK
PADI-YMCA inst., 6000 PSI air. In house repairs
HYDRO-VIP. All area wreck diving. Sales-Service-Rental

SOUTH BAY DIVING CENTER
666 Merrick Rd., Copiague, NY 11726 (516) 842-9658
Authorized Scubapro Dealer
Sales, Services, Rentals, Repairs, Instruction

NORTH CAROLINA

DIVE THE GRAVEYARD ABOARD PARAGON II (919) 353-0412
32', Fully Eqpt., Fast & Comfortable, Cert. Capt. & Diver
THE SCUBA CENTER, Inner Space Specialists, Full Sales &
Serv. NAUI, PADI 1909 Lejeune Blvd., Jacksonville, N.C.

WRECK DIVE WITH NAGS HEAD DIVERS, INC.
35 Fathom Pro Dive Center, Inc. 919/441-7594
P.O. Box 502, Mile Post 10.5, Nags Head, N.C. 27959
Wreck Dive Charters-Scuba Sales-Service-Rentals

DIVE THE GRAVEYARD WITH THE SCUBA CENTER, INC.
1909 Lejeune Blvd., Jacksonville, NC (919) 353-0412
Full Sales & Service, Air, Rentals, Instruction
(PADI, NAUI) - Dive Charters

DISCOVERY DIVING CO., INC.
328 Front St., Beaufort, NC 28516 (919) 728-2265
Sales-Service-Rentals-Instruction-And Resort Course
Daily Half and All Day Dive Charters, Two Boats, U-352 Trips

OIHO

PRO DIVERS SPECIALTIES
425 West McCreight Ave., Spfld, Ohio 45504
1-513-322-5613
PADI - Rentals - Air - Sales - Repair

PENNINGTON RUBBER COMPANY (513) 641-0211
4676 Paddock Road, Cincinnati, Ohio 45229
U.S. Divers Distributor
Large Inventory — Wholesale & Retail

MIAMI VALLEY SCHOOL OF DIVING
18 E. Franklin, Dayton, OHIO 513-433-6248
US Divers-Dacor-Sales-Rental-5000 PSI Air
YMCA & PADI Certified Instruction Trips

OKLAHOMA

DIVE SHOP — 1111 S. Commerce, Ardmore. 223-1032
Air-Sales-Rentals-Custom suits-Scubapro 223-2034
Open Sun. April 1 thru Oct. 1, Cozumel-Bahama Trips.
Large EQ Stock. A Complete Pro Shop. NASDS.

PENNSYLVANIA

SMOKEY'S DIVER'S DEN 717-393-5333
412 N. Duke St., Lancaster, Pa. 17602
Air-Cert. Instr.-Rentals-Sales-Service-Recov. U/W
Tours. Lecture-Slides-Movies for Schools - Clubs

THE DIVING BELL, INC. 215/763-6868
681 N. Broad St., Philadelphia, Pa. 19123
Scott Pruyn, Mgr — Call first for shop hours
Free Parking on both Pruyn ("Prine") lots

DON COOK'S SCUBA EQUIPMENT (717) 326-2091
940 Market St., Williamsport, Pa. Closed Wed.
Air - Cert. Inst. PADI - Sales & Service
Pro Dive Shop

PROFESSIONAL DIVING SERVICES CO.
726 Pittsburgh St., Springdale, Pa. 274-7719
Basic, Adv. Scuba, U/W Photo, Wreck Courses
Equip., Sales & Service, Air, Tours

YORK SKIN DIVERS' SUPPLY, INC. (717) 854-3133
1505 S. George St., York, Penna.
Instructions - Sales - Rentals - Air
Service - Commercial Diving/Communications

T.C.'S DIVE SHOP (215) 628-4935
318 E. Butler Pike, Ambler, Pa. 19002
Sales - Rentals - Dive Trips -
Repairs - Air Fills - Instruction

SEA-WORLD DIVERS 215/432-6866
1113 Union Blvd., Allentown, PA 18103
FULL SERVICE-Air-PADI INST-Sales, Repair, Rentals
Island Tours-Lectures-ALL YR. DIVING ACTIVITIES

AQUA HUT PLUS, Helen Link (215) 483-8408
4329 Main St., Philadelphia, PA 19127
Air, Instr., Rentals, Salvage, Trips, Boat Charters
Hours: M thru F: 12-8, Sat.: 10-5

RHODE ISLAND

RHODE ISLAND DIVER'S SUPPLY (401) 274-4482
209 Elmwood Avenue, Providence, R.I.
Air, Rentals, Repairs, Sales, Hydrostats
NASDS Instruction, Indoor Heated Pool

NEWPORT DIVING CENTER
433 Thames Street
Newport, Rhode Island (401) 847-9293
Sales, Service, Air, Rentals, Charters

SOUTH CAROLINA

THE WET SHOP
5121 Rivers Ave., Charleston, SC 744-9276
Instruction, Sales, Service, Rentals, Charters
Hydro Test-5000 psi Air-Photo Equipment

TENNESSEE

THE SCUBA LOCKER 929-1521
1310 West Market St, Johnson City, TN 37601
PADI-YMCA Certified Instr, Sales-Repairs-Air
No. Carolina Wreck Diving Trips-Florida Keys Trips

TEXAS

DIVERS WORLD, INC. (N. Dallas)
632 S. Central Expwy, Richardson, TX 231-7865
Major Brands, Sales, Air, Rentals, Repairs, Hydro-
World-Wide Trips, NAUI Instr, Nikonos, Zodiac Infl. Boat

DIVEMASTERS INC.
447 McCarty, San Antonio, Texas (512) 349-9321
Sales, Instruction, Rentals, Air & Service
Dive Tours to Cozumel, Cayman & Honduras

PADRE ISLAND DIVE SHOP (512) 855-2821
4455 S. Padre Island Dr., Corpus Christi, TX 78411
"Full Service" Dive Shop - PADI/SSI/YMCA
Oil Rigs & Liberty Ship Charters

BLUE WATER DIVING SCHOOL
910 Westheimer, Houston, TX 77006 (713) 528-0634
Downtown Location - Scubapro Dealer - Gulf Dives
Bus Trips to Fla. - Se Habla Espanol - Photo Equipt.

DEL RIO DIVING 512/775-2949
1108 E. Gibbs, Del Rio, TX At Lake Amistad
All Major Brands, Service, Rentals, Mail Orders
Caribbean Dive Trips, Group Air Rates

ARLINGTON SCUBA CENTER, INC. (817) 265-6712
2414 W. Park Row Dr., Arlington, Texas 76013
PADI Instruction, Air, Sales, Rental, Repair
Most Complete Pro Service in North Texas

AQUAVENTURES PRO DIVE SHOP 713/832-0254
1447 1/2 Grand (Magnolia @ IH-10) Beaumont, TX
Sales & Service of ALL Brands Diving Equipment
Instruction, Gulf and Caribbean Trips

POSEIDON DIVERS, INC.
5701 Bellaire, Houston, TX 77081 (713) 664-4242
Sales - Rentals - Repairs - Instruction
Gulf & International Dive Trips

SPORT DIVER'S (713) 486-1844
1017 Bay Area Blvd., Houston, TX 77058
Instruction, Sales, Service, Rentals, Air, Group
Tours to Mexico and Cayman, Local Gulf Trips

VERMONT

NORTHERN DIVERS INC. (802) 862-3881 (B)
65 Main St., Burlington, VT
NAUI Instruction, Sales, Rentals, Repairs, Commercial
5000PSI Air, Travel, "A Professional Dive Shop"

VIRGINIA

UNDERWATER OUTFITTERS (703) 342-DIVE
537 West Campbell Ave., Roanoke, VA 24016
Sales-Rentals-Service-3000 PSI Air-Resort Travel
Wreck Dives-Fla. Trips-PADI Instruction

AMERICAN WATER SPORTS OF VA (703) 534-3636
821 W. Broad St. (Rt. 7) Falls Church, VA 22046
Scuba Instr. Sales-Air-Rentals-Repairs-Hydros
U/W Photo Equip./Courses-Trips-Metal Detectors

AQUA-LUNG DIVING CENTER, INC.
805 W. Little Creek Rd., Norfolk, VA (804) 423-0537
9601 Jefferson Ave., Newport News, VA (804) 596-1914
Sales-Rentals-Repairs-Hydro-Air-Instruction

WEST VIRGINIA

U.S. DIVERS CO. AUTHORIZED REPAIR CENTER
U.S.D. prods. only - singl. hose reg. & tank valves, VIP
Sales, Instruction, Tours, Newsletter 304-683-4595
Ray Lambert Ent., Inc., Rt. 1 Box 646, Sullivan, WV 25930

WISCONSIN

FONTANA ARMY-NAVY & OUTDOOR SPORTS, INC.
Hwy. 67, Fontana, Wis. 53125 (414) 275-2220
Air - Instructions - Equipment - Rentals
Hydrotests - PADI Training Facility

3 LITTLE DEVILS SCUBA DIVE SHOP
Rt. 4, HWY 123, BARABOO, WI (608) 356-5866
NORTH ENT. TO DEVIL'S LAKE STATE PARK
SALES LESSONS-AIR-RENTAL-GREAT DIVING!

BAHAMAS

CHAMBERED NAUTILUS CASUARINA POINT CLUB
P.O. Box 594, Marsh Harbour, Abaco, Bahamas
Full Service Dive & Island Adventure Centre
Rental Homes, Instruction; Resort thru Instructor

PINDER'S COTTAGES call collect (809) 367-2207
Great Guana Cay, Abaco, Bahamas - Fishing - Diving
Shelling-Sportsmans Paradise - Indv. & Grp Accom
Boat, Guide, Cottages\$125 per person a week

UNDERWATER EXPLORERS SOCIETY (UNEXSO)
Box F-2433, Freeport, Bahamas (809) 373-1244
Famous facility - Reef Trips - NAUI Courses
Group Rates - 18' Deep Tank - Chamber - Air

FREEPORT-Oceanview Apts. \$35/day, \$225/Wk., for 5 Rm.-
2 bath Apt. Incl. Air Tanks. Near dive clubs & resort area. Fully
equipped kitch., linens, T.V., pool. (305) 574-2604
Brochures: E. Durksen, 1725 Haverhill, Deltona, FL 32725

HARBOUR ISLAND, VALENTINE'S YACHT CLUB AND INN
Box 1, Harbour Island, Bahamas. For Resvns.—809/333-2142
or Bahamas Reservations Service 800/327-0787
in Florida 800/432-5595, in Canada Zenith 99110

WINDING BAY BEACH RESORT (809) 334-2020
Box 93, Rock Sound, Eleuthera, Bahamas
Dive Instructor, Dive Tours, Rental & Air, Water Sports
A/C Rooms, Gourmet Dining, Pool, Tennis, Bicycles

EXUMA DIVERS—GEORGE TOWN EXUMA 803/722-1996
Instructor, Air, Rentals, Dive Boat, Spectacular
Reefs, \$226 includes 7 days 8 dives Equip meals bed car
Write 33 Lockwood Blvd, Chas. S.C. 29403

PASSAGEMAKER CHARTERS INC. 305-751-8806
1095 N.E. 83 St., Miami, FL 33128
63' Twin Diesel Dive Boat with 15 CFM
Compressor, 40' Diesel Sloop, Bareboat.

BARBADOS

THE DIVE SHOP LTD. 60888, Ex. 380 or 62031
P.O. Box 448, St. Michael, Barbados
Sales, Rentals, Day and Night Dives,
Wreck Dive, NAUI, PADI, ACUC.

BELIZE

ST. GEORGE'S LODGE, Dive the world's second largest barrier
reef. Diver designed and operated private island resort.
Excellent food and accommodations. (714) 675-4320
BAY TRAVEL, 2435 E. Coast Hwy., Corona del Mar, CA 92625

BERMUDA

SHAFFER'S UNDERWATER WORLD 809/297-1777
Holiday Inn, St. George's, Bermuda 809/297-8222
PADI Instruction, Rentals, Air, Wreck & Reef
Diving on 50 Ft. Glass Bottom Boat, Resort Courses

BERMUDA WATERSPORTS (Wakefield Marine Co., Ltd.)
Grotto Bay Hotel (Knightsbridge) Toll Free 800/225-2230
Prime Location, 41' Dive boat, access to all wrecks
Novice, Experienced, certified & Groups. 809/293-2640

BRITISH VIRGIN ISLANDS

MARINA CAY HOTEL & DIVE BVI LTD. Ph: 4-2174
Box 76, Road Town, Tortola, B.V.I.; J. T. Giacinto
NAUI #3491, Instr. Rentals, Air, Tours, Wreck
Diving, etc.: 6-acre Island Diving Resort.

AQUATIC CENTRES — GEORGE & LUANA MARLER
Box 108, Road Town, Tortola, B.V.I. Phone: 42858/59
Dive the Rhone and Beautiful Reefs
Tours - Rentals - Air - Photography Specialists

CANADA

FLOAT N' FLAG SPORT & DIVE INC. (416) 637-DIVE
564 Plains Road East, Burlington, Ontario
Private & Group Lessons, U/W Photo Specialists
Sales - Service - Air - Rentals - Hydros - ACUC

ROWAND'S REEF
5760 Cedarbridge Way, Richmond, B.C. 273-0704
2828 W. 4th Ave., Vancouver 732-1344
Custom Wetsuits, Compressors, Equip. Catalog

DAN'S DIVE SHOP INC. 416/934-2160
48 Lakeport Rd., Box 502, St. Catharines, Ont. L2R 6V9
SCUBA Facility - Sales - Service - Metal Detectors
Mail Order Catalogue & Prices \$1 (deductible)

SCUBA WORLD, INC. (613) 746-3433
2050 Meadowbrook Rd., Ottawa, Ontario
U.S. Divers - Dacor - NAUI Instruction
Rentals - Air - Repairs - Dive Trips

POINTS WEST DIVING (604) 980-6501
1073 Roosevelt Cres., North Vancouver, B.C.
Sales - Rentals - Service
NAUI Instruction - 52' Dive Boat

CAYMAN

Undersea Photo Supply of Cayman Tel. 94686
P.O. Box 1551-S Grand Cayman Island, B.W.I.
Camera & Strobe Sales, Rentals, Repairs, Instruction
Film Processing, Batteries & Gifts. Mail orders acppt.

CAYMAN DIVING LODGE (305) 491-0333
Full accommodations, daily dive trips, Dive shop &
underwater photography. Write to 241 E. Commercial
Blvd, Ft. Lauderdale, FL 33334

CHILE

AQUA CENTER LIMITADA Fono 269
Enrique Meiggs - 1960, Quintero, Chile
Underwater Work And Services
Tours, Sales, Rentals, Air, Training

DOMINICAN REPUBLIC

MUNDO SUBMARINO, PRO DIVE TOURS 566-0340
Gustavo Mejia Ricart #99, Sto. Dg., Dom. Rep.
Snorkel, Scuba, Spearfishing, Hunting Trips
PADI Training Facility. Group Pkgs./All year round

ENGLAND

COLLINS AND CHAMBERS LTD.
The London Diving Centre 01-985-0752
197-201 Mare St., London E8 3QF England
Everything for the Diver. Export & Mail Order

HAITI

BASKIN IN THE SUN Tel: 7-1200
Ibo Beach Hotel, P.O. Box 851, Port-au-Prince, Haiti
Dive with Alan Baskin and Eva Cope . . Wow!
PADI Tng. Fac. Get Adv. OW Cert in 3 days, Ind/groups

HONDURAS

ANTHONY'S KEY RESORT - ISLA Roatan, Honduras.
unlimited diving, excel. Shallow or deep diving at
resort, barrier reef, tennis, sailing, horses. U.S.
Off: 3803 Wagonwheel Ct., Plano, TX 75023

HONG KONG

FAR EAST DIVING EQUIPMENT CO., LTD./64742 FDIVE HX
13-B Nullah Road, Kowloon, Hong Kong 3-808226-7
PADI, Sales, Rental, Air, Manufacturer, Exporter
Agents of U.S. Divers, Spirotechnique, Technisub

ISRAEL

RED SEA DIVERS, U.S. OFFICE (212) 877-8240
Suite 821, 580 - 5th Ave, NY NY 10036
Red Sea's largest to Eilat, Sharm E. Sheik, Tiran
Charter boats, land seafari, complete tour arrangements

Divers Directory

AQUASPORT INTERNATIONAL RED SEA DIVING CENTRE, LTD.
Coral Beach, P.O. Box 300, Eilat, Israel 059-2788
Equip. Hire, sale, service, testing, air, cameras
P.A.D.I. diving courses, safaris, day tours, windsurfing

LUCKY DIVERS - EILAT SCUBA CENTER, LTD.
Moriah Hotel, Gulf of Red Sea
ISRAEL'S NEWEST, MOST COMPLETE DIVE CTR. PADI, YMCA,
CMAS cert. Latest Amer. gear. A/C van to sites. Boat, JetSki

DOUBLE YOUR LUCK!
LUCKY DIVERS, Marina Hotel, Sharem-e-Sheikh
New 62' Diving Yacht, Amer. Gear, guide, refills.
THE BEST WAY INTO THE RED SEA SINCE MOSES!

NEVIOT-DIVING CENTER-HOLIDAY VILLAGE
Post Eilat, telex (07) 7783 (NEVHO-IL) Exciting Diving
"Seafaris" along the Sinai reefs. Internationally
recognized D. course, Windsurfing, Write for info.

JAPAN

MACK'S DIVING OF JAPAN 052-(211)-1772
2-18-34 Nishiki, Naka, Nagoya, Japan
Dive Tours - Okinawa, South Seas
PADI Instruction, U/W Photo, Dive Shop Full Service

SEA TOPIA PRO DIVING CENTER OKINAWA, Inc.
593 Isa, Ginowan City, Okinawa 09889-2-5567
Custom made WET SUITS
Sales - Repair - Rentals - Air

FUJI LUNG CO., LTD. Ph. 73-2222
No. 17 Oishi-cho Kano Gifu JAPAN
Telex: 47-22222 FUJILG-J
Manufacturers, Importers, Exporters

MALDIVES

HOTEL KURUMBA VILLAGE-Rentals-Dive Trips-Instruction-
Group Rates-Windsurfing, Dive Paradise in Indian Ocean
Chris Floden, Club Eurosub, Kurumba Village
Rep. of Maldives. Telex: Unient 66024 MF

HOTEL KURAMATHI. Barakuda Diving Club on Paradise Island
Diving instr., UW-Safaris-Ind. & Grps., Windsurfing, etc.
Ranier Huth, Barakuda Club, Kuramathi, Rep. of Maldives
Telex: UNIENT 66024 MF ANEX CARDS

DIVEWISE SERVICES—TEL. NO. 36441
Dragonara Casino—St. Julians—Malta
Dive Tours, Instruction, Sales, Air, Etc.
Diving Director: Vincent Milton B.S.A.C., P.A.D.I.

MEXICO

LA CEIBA BEACH HOTEL 2-0379
Cozumel, Q. Roo, Mexico P.O. Box 284
FOR VERY SPECIAL DIVERS/U.W. TRAIL, PLANE WRECK
Pancho Morales, Managing Partner

GALAPAGO-INN DIVE RESORT Ph. 2-06-63
Cozumel, Q. Roo, Mexico P.O. Box 289
New Divers Headquarters in Mex-Caribbean
Full SCUBA, Flat-top, Trips & Group Pkgs.

DISCOVER COZUMEL DIVE SHOP Ph. 2-02-80
P.O. Box 75 — Isla de Cozumel Q. Roo
Daily dive trips - Lessons - Air Station
Rentals - Sales - Grp. Rates. Ernesto Kentzler, Owner

AQUA TOURS — Dive the Yucatan Reefs!
Can Cun Q. Roo, Mexico. P.O. Box 528 Ph 30227
Daily trips to I. Mujeres, Nizuc & P. Morelos
Instruction, Rentals, package, Group Rates

BAJA, SEA OF CORTEZ (213) 271-4116/272-3011
8 Day Cruises on "MARISLA II" for 16 Divers
8 Staterooms, Air, Tanks - Group Rates. Contact:
BIT 9465 Wilshire Blvd. Suite 832, Beverly Hills, CA 90212

LORETO DIVERS SUPPLY TEL. 29
Calle Salvatierra #47 Loreto, BASA CA SUR
Air - Boats - Rentals - Sales
Group Rates - Reservations

SAN CARLOS DIVING CENTER AND CHARTER BOATS
P.O. Box 655, Guaymas, Son., Mex. Ph. (San Carlos) 6-00-49
5000 psi pure air, full rentals, sales, repair, NAUI instr.
Trips to San Pedro Island. Six boats avail. Open 7 days

LAS GATAS BEACH CLUB & DIVE RESORT
Apdo. Postal 81, ZIHUATANEJO, GRO. (800) 323-7000
Vacation Dive Packages, Summer Dive Camp
Certification, Owen Lee, Dir., Borchure

MICRONESIA/GUAM

MICRONESIA AQUATICS OF TRUK LAGOON—Tours arranged
for diving Truk Lagoon - Boats & Guides - Sales - Instr.
Rental - Air - Hotel Reservations - Complete tour & dive svcs.
P.O. Box 57, Truk Lagoon, E.C.I. 96942

NETHERLANDS ANTILLES

MAHO WATERSPORTS, MULLET BAY, ST. MAARTEN Ph. 4387
Dive with the Pros on the 1801 wreck "Proselyte."
Tours by NAUI instr. on 25' MAKO.
Resort course avail. for novices.

BONAIRE BEACH BUNGALOWS. Brand new, fully equipt.
2 bdrms., airco. on beach, 3 min. from dwtwn., reasonable
Write: Bungalows P.O.B. 155, Bonaire,
Netherlands Antilles. Phone: 8585

SUBSEA SAFARIS N.V. Tel: 3900 or 4617
Aruba Sheraton Hotel, N.A.
Instruction - guided wreck/reef dives - repairs
Snork - Air - Night diving - Retail

SABA SCUBA SAFARI — SABA ISLAND, N.A.
For those who have been everywhere . . . Ph: 04-3277
Top Notch Diving, 75-200+ft. vis. — Small Groups
NAUI & PADI Instructors — Personalized Diving

TALK OF THE TOWN RESORTS—ARUBA
Surfside Watersports, Diving, Snorkeling, Sailing,
Skiing - Certified instructor, equipment rental -
special packages available. Tel: 3380

NEW GUINEA

TROPICAL DIVING ADVENTURES PTY. LTD.
Box 1644, Boroko, Papua New Guinea 257429 or 251716
Trips, Tours, Safaris, NAUI/PADI Instruction, Sales
Service, Charter Vessel, Photography. Dive Paradise

NEW ZEALAND

DIVE CENTRE LTD. Ph. 447-698 & 446-948 128 Wairau Rd.,
Takapuna, Auckland, NZ. All Services - All Shop Facilities -
Air - Rental - Exclusive Tour Programmes in our Transporter
Incl. Poor Knights Islands

PHILIPPINES

BUNN'S PHILIPPINES DIVING EQUIPMENT CORP.
928 Pasay Road, Makati, Metro Manila - 853-676 or 872-134
PADI/NAUI Instruction-Rentals-Sales-Air-Repair
Dive Master Serv-Tours-Custom & Ready to Wear Suits

AQUAVENTURE (PHIL.) INC./DIVE 7000 RESORTS
*708 Aurora Blvd., Queson City 79-86-48
*908 Pasay Road, Makati, Metro Manila 70-05-88
Dive Cruise Vessel-Equip. Sale-Rental-PADI-NAUI Instr.-Air

PUERTO RICO

DIVE F.R. VIRGIN ISLANDS DAILY or WEEKLY 36'
DIVE BOAT INNOVATION. Capt. GREG KORWEK (NAUI)
CARIBBEAN SCHOOL of AQUATICS. LA CONCHA Hotel
Bx 4195, San Juan, PR (809) 723-6090, 724-7609

VEQUES DIVERS, Customized boat diving on
the out island Vieques, Sales, Rentals, Air,
Spearfishing, Live Reefs, 80' + Vis, PADI Instr.,
Box 1001, Vieques, P.R. 00765 Tel: (809) 762-9702

ISLAND HOUSE WATER SPORTS
Dive, Snorkel, Ski, Sail, Rentals, Sales
Box 1012, Pkgs Avail., Duffy's 11 Rm. Vieques Pr 00765
Guest House on beach.

SOUTH PACIFIC

SCUBAHIKE — Fiji's only Scuba SPECIALISTS.
P.O. Box 777, SUVA, FIJI. Ph. 361-241
Div. Exped. Fast Charter Boats, Gear Hire,
Air. Groups a specialty. Write for brochure.

VENEZUELA

Divers School C.M.A.S. certification, excursion in
the Caribbean Sea, in the motor-sailer KANALOA or in
our place EXPLOSUB in the Melia Hotel: 978.07.53 or
P.O. Box No. 62418, Caracas 106, Venezuela

VIRGIN ISLANDS

JOE VOGEL (Ex-UDT) 809-774-2321
P.O. Box 7322, St. Thomas, U.S.V.I. 00801 775-4320
SCUBA Instr./Day & Night Dives/Air/2 Shops 775-1610
Oldest Cert. Diving School in US V.I.

WATERSPORTS CENTER 775-0755/774-5649
Sapphire Bay - Pineapple Beach, Box 2432, St. Thomas
cuba Instruction, Boat Dives, Night Dives
Reef & Wreck Dives-U/W Photo-Air-Rental-NAUI, PADI

VIRGIN ISLAND DIVING SCHOOLS AND SUPPLIES
Box 9707, St. Thomas, USVI 00801 809-774-8687
Tours & Classes for Beg. & Adv., Air Sales, Service
Rntl., Photo, Grps., Night Dives, Carib's most comp. dive fac.

CARIBBEAN SEA ADVENTURES, INC. (809) 773-5922
Box 3015, CHRISTIANSTED, ST. CROIX, USVI 00820
Two Complete Dive Shops - Guided Tours Daily to
St. Croix's Best Sites aboard 40' Deliverance

THE DIVE LOCKER (809) 775-3110
Lagoon Marina, Red Hook, St. Thomas, V.I. 00801
Dockside Air, Sail/Dive Packages, Trips, Accommodations,
All Diving Related Services Available.

CARIBBEAN DIVERS (809) 775-1935
Red Hook, St. Thomas, V.I. 00801
Tours, Instruction, Rental, Accom. Available
Fresh Air-Full Service Dive Shop-Group Rates

ST. JOHN WATER SPORTS (The Dive Shop)
Box 70, Cruz Bay, St. John, VI 00830 (809) 776-6256
Scuba, Snorkel, Day Sail, Sport Fishing Tours-Daily
Full Srv. Dive Shop-Air-Rentals-U/W Photo, PADI, YMCA, SSI

PRESSURE, LTD. (809) 77-DIVER
Box 3612, Christiansted, St. Croix, USVI 00820
U/W Tours, Day/Night, Photo, Rentals, Air, Instruction
Hotel Pkgs. Floating Shop and Boats on C'sted Wharf

THE SALTY DOGS (809) 773-2678
59 Kings Wharf, C'sted., St. Croix 00820
Dive St. Croix's best sites, certification,
instruction, rental, air, hotel pkgs, U/W hunting.

WEST INDIES

PIRATE SCUBA CLUB Ph: 85 12 04 Ext. 328
Ajoupa-La Vieille Tour, 97190 Gosier, Guadeloupe F.W.I.
Daily Boat dives-Instr-Snorkeling-Water Camera Renting
For Both Islands Guadeloupe & Martinique

SCUBA SHACK
Palm Island, St. Vincent, Grenadines, W.I.
Rentals - Air - Guided Trips - Instruction
Cheapest Rates in the St. Vincent Area

WEST INDIES DIVERS (Antigua-Barbuda) Hyatt Halcyon Cove
Hotel Antigua, W.I., cert. PADI instr. (begin-adv.); Reef & Wreck
dives to Barbuda; Nite, u/w photos; Fully equipt. Diveboat
Air, rntls., Grps., Dive pkgs.-Accom. Antigua: 20256, ext. 268

AYUASPORTS LTD., Negril, U/W Photo., equip for 40 divers,
sailing, snorkeling, cert. instr., night dives, rooms, huts, rest./
bar. Pkgs. avb. For info & resv.: P.O. Box 152, Chestnut Hill, MA
02167. P.O. Box 14, Negril, Jamaica (617) 965-4039

LEARN
WIDE-ANGLE
Photographic Techniques
in the April
skin diver
on sale March 27

ATTENTION DIVING CLUBS

SKIN DIVER has a special diving club
rate available for group orders.
(Magazine will still be delivered to
each member's home.)

skin diver

6725 Sunset Blvd. Los Angeles, CA 90028
Attn: C. Murray

☐ Please send details on *SKIN DIVER's*
club subscription rate.

Club Name _____

Your Name _____

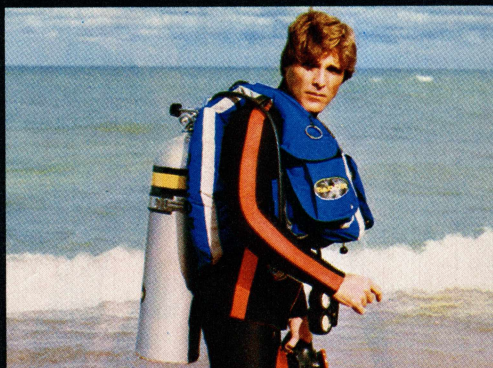
Street _____

City _____

State _____ ZIP _____

DACOR "seachute" JACKET

THE TOTAL CONTROL B.C. SYSTEM



Model BCSL—Seachute Jacket—Made of durable blue cordura material with silver gusset inserts, the jacket type construction provides wrap around support for total buoyancy control. The Seachute Jacket has the following features:

- VIS power inflator standard.
- NQP over center cam back pak standard.
- Over pressure relief valve with quick purge lanyard rests high on right shoulder for maximum deflation. Large ring can be easily located and activated even while wearing gloves.
- Inflate/deflate hose rests high on left shoulder.
- Removable inner urethane bladder accessible through neck zipper.
- Mesh drains on two front and two back panels for quick water drainage.
- Covered inner bladder drain.
- Slots on each shoulder for optional strap will secure the BCS closer to the diver for more stability.
- 10" x 6" pocket with 4" velcro closure on each front panel provides large carrying capacity.
- Four large "D" rings provide areas for attachment of belt hooks, marker buoys, etc.
- 1½" crotch strap standard, but can be removed.
- Velcro closures on right and left shoulders allow regulator and pressure gauge hoses to be readily accessible.
- 25 gram CO₂ cartridge and detonator standard on left front panel under pocket.
- Extra CO₂ detonator post under right pocket for installation of another optional detonator and cartridge.

Model BSCM—Seachute Jacket—Same features as the BCSL, but approximately 20% smaller in size.



DACOR CORPORATION
161 Northfield
Road,
Northfield, Illinois
60093
P.O. Box 157

Send \$2.00 for Dacor Divers Kit. Includes catalog, cloth patch, decomp table, decals.

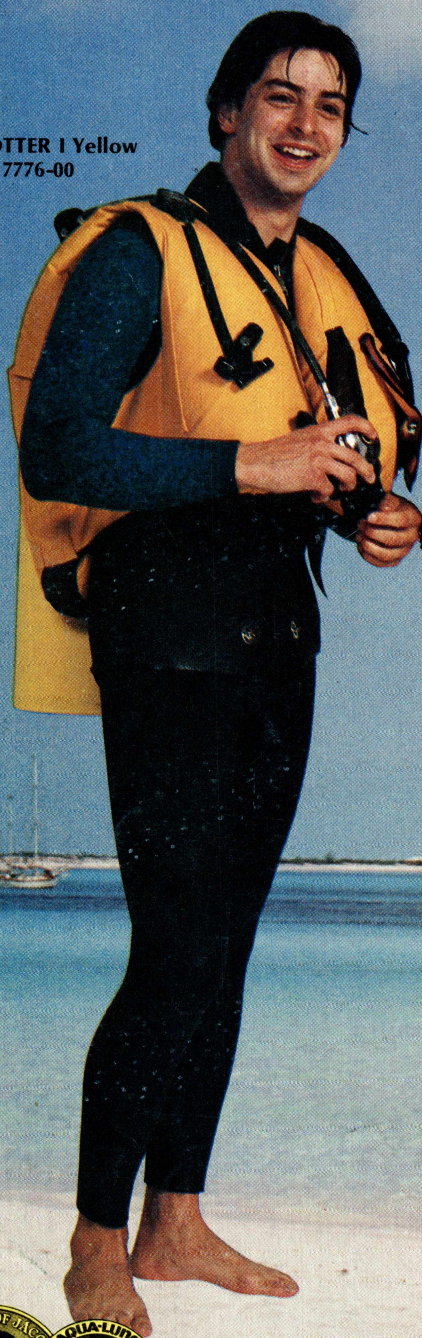
U. S. DIVERS...AQUA-LUNG® EXPERIENCE THE SEA OTTER

The World's Finest B. C. Jacket

A Unique Diving Experience
Quality, Performance and Dependability
Guaranteed

Sea Otter...You Deserve the Best

SEA OTTER I Yellow
7776-00



SEA OTTER II Blue
7777-80



The world's largest and oldest manufacturer of
sport, military and commercial diving equipment.

U.S. DIVERS CO.

3223 West Warner Avenue • Santa Ana, CA 92702

Copyright 1980 U. S. Divers Co. Part No. 7577-75



Jacques-Yves Cousteau
Chairman of the Board

A Subsidiary of Liquid Air Corp. of North America

